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Extension arm which is pivotally mounted on a support

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(71) Applicant(s)  
Glatz AG

(72) Inventor(s)  
Gustav Adolf Glatz

(74) Agent/Attorney  
F B Rice and Co,605 Darling Street,BALMAIN NSW 2041

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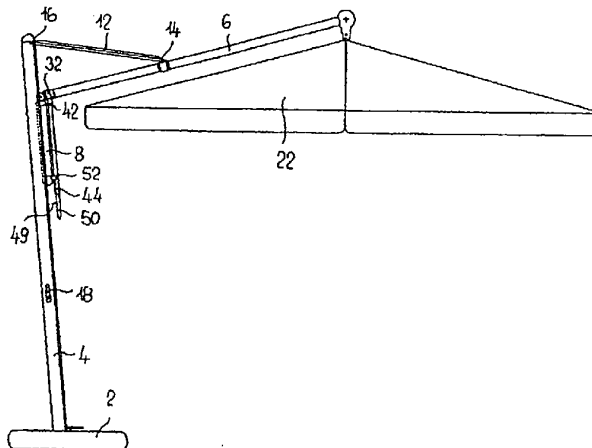
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| (71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von US): | GLATZ AG [CH/CH]; Neuhoftstrasse 12, CH-8500 Frauenfeld (CH). |                                      |   |

[Fortsetzung auf der nächsten Seite]

(54) Title: EXTENSION ARM WHICH IS PIVOTALLY MOUNTED ON A SUPPORT

(54) Bezeichnung: AN EINEM TRÄGER VERSCHWENKBAR ANGEORDNETER AUSLEGER



(57) Abstract: According to the invention, a guide rod (44) is provided for improving the ability of an extension arm (6), which can rotate around the axis (24) thereof, to pivot on a support or a pole (4). Said guide rod can be locked into different rotational angle positions with the extension arm (6) and can be retained on the support (4).

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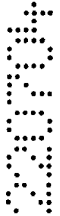
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**GLATZ AG**

**COMPLETE SPECIFICATION**  
**STANDARD PATENT**



*Invention Title:*



*Extension arm which is pivotally mounted on a support*

The following statement is a full description of this invention including the best method of performing it known to us:-

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Technical Field

The invention relates to an extension arm which is arranged on a support such that it can be pivoted about its axis. According to a preferred exemplary embodiment, such an extension arm is designed as an extensible free arm and the support is designed as a pole of a free-arm sunshade.

Prior Art

10 An extension arm which is arranged on a support such that it can be pivoted about its axis is set out in EP 0 830 074 B1, in the case of which the extension arm is configured as an extensible free arm and the support is configured as the pole of a free-arm sunshade. In order to make optimum use of the shade as the position of the sun changes, it is possible not just for the pole to be rotated about its own axis but also, in particular, for the extension arm to be pivoted about its axis, with the result that the sunshade can be moved into an appropriate oblique position and arrested there. For this purpose, a hand lever is fitted, for example, on the extension arm in order to pivot the extension arm, and thus the sunshade, and then to arrest the same in the pivoted position by means of a clamping arrangement. The disadvantage here, however, is that the hand lever fitted on the extension arm is difficult to reach as a result of the extension arm usually being located at a high level. In addition, the operation of pivoting the extension arm with the sunshade framework requires relatively large forces, which can barely be applied, if at all, by the small hand lever. Added to this is the fact that, depending on the sunshade position, such a hand lever projects to a more or less pronounced extent into the space occupied by the user, which is not just unsightly but also poses a risk of injury to the user.

The same applies to the clamping lever of the clamping arrangement for arresting the extension arm in the pivoted position. In order to improve the handleability, it is known to use a worm gear mechanism. Such a worm gear mechanism not only is a relatively expensive component but also only allows slow adjustment and is barely accessible.

Any discussion of documents, acts, materials, devices, articles or the like which has been included in the present specification is solely for the purpose of providing a context for the present invention. It is not to be taken as an admission that any or all of

these matters form part of the prior art base or were common general knowledge in the field relevant to the present invention as it existed before the priority date of each claim of this application.

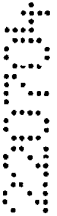
- 5 Throughout this specification the word "comprise", or variations such as "comprises" or "comprising", will be understood to imply the inclusion of a stated element, integer or step, or group of elements, integers or steps, but not the exclusion of any other element, integer or step, or group of elements, integers or steps.

10 Summary of the invention

- According to a first aspect the present invention provides an extension arm which is arranged on a support such that it can be pivoted about its axis and which can be pivoted, and arrested in the pivoted position, by means of a hand lever, characterized in  
 15 that the hand lever is designed as a guide rod which, on the one hand, can be latched to the extension arm in different angle-of-rotation positions and, on the other hand, can be arrested directly or indirectly on the support.



- Embodiments of the invention may provide an extension arm, which is arranged on a  
 20 support such that it can be pivoted about its axis, in such a way that pivoting is easily possible even with the extension arm located at a relatively high level and in the case of relatively large forces of inertia.



- Since the hand lever is configured as a guide rod, it is possible for the guide rod to be  
 25 of a longer overall length, and thus for the extension arm to be arranged at a higher level, while such a guide rod, rather than projecting in an obstructive manner into the space occupied by the user, is nevertheless always positioned, when in use, against the support, to which it is arrested in a releasable manner directly or indirectly. This means that the guide rod does not constitute any obstruction or hazard for the user and can  
 30 nevertheless be handled straight forwardly and with little force being required.

- In preferred embodiments of the invention the guide rod on the extension arm may be arranged on an adjustment ring which can be pivoted about the extension arm and can be latched to latching recesses of the extension arm by means of a latching bolt. In  
 35 such embodiments, it is possible for the latching bolt to be arranged and actuated independently of the guide rod. It is further advantageous if, in some embodiments the

latching bolt is prestressed toward the latching recess by means of a prestressing spring, this achieving reliable latching in the case of which undesired unlatching of the latching bolt is prevented. If appropriate, it is possible, for the guide rod to be arranged in an articulated manner on the latching bolt and to serve for actuating the latter. This increases, however, the risk of undesired actuation, which is to be avoided for safety reasons. Further embodiments of the invention may provide for the guide rod to be connected in an articulated manner to a housing of the latching bolt and contains a traction element which is connected to the latching bolt for the release of the latter. In such embodiments the traction element is arranged such that it is protected by the guide rod, with the result that undesired actuation is largely prevented. In further embodiments of the invention, the guide rod may be provided with an axial through-passage opening for accommodating the traction element. Arranging the traction element within the guide rod results not just in better safety, but also in improved aesthetics.

There are various possible ways of actuating the traction element. In some embodiments, the traction element may have a preferably eyelet-like handle which is arranged at the bottom end of the guide rod. According to such embodiments, a handle of the guide rod may also serve, at the same time, for actuating the traction element. For aesthetic, practical and, in particular, safety purposes, however, the arrangement of an additional catch, assigned to the handle of the guide rod, for the traction element may be preferred in some embodiments.

In order to keep the extension arm, and a sunshade, which may be fastened thereon, in the pivoted position, it is necessary to arrest the guide rod on the support. In preferred embodiments the guide rod may be arrested on the support via an arresting member.

The guide rod may have various cross sections. Particularly expedient, is a D-like cross section with a rounded part and a rectilinear base part. In this case, the basic position is preferably set up such that the rectilinear base part is directed toward the support.

There are likewise various possible ways of configuring the extension arm. It is thus possible, for example, for it to comprise a solid profile. A hollow configuration may be provided in which it is possible to accommodate a traction element, for example, for opening and closing a sunshade canopy.

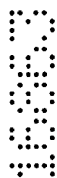
The support may be of any desired design and may comprise, for example, a wall or a pole. The extension arm may be arranged on a supporting member such that it can be rotated about its axis, said supporting member being connected in an articulated manner to a carriage which can be displaced, and arrested, along the support, which has a pole.

- 5 Such embodiments may be advantageous in particular for the use as a free-arm sunshade. In this case, the guide rod may be arrested on a carriage belonging to the pole.

- 10 In still further embodiments, the extension arm may be designed as an extensible free arm and the support may be designed as a pole of a free-arm sunshade, as is described in EP-B1 0 741 531 and 0 830 074.

Brief description of the drawings

- 15 Advantageous configurations of the invention are described in more detail hereinbelow using the example



of a free-arm sunshade and with reference to the drawings, in which:

5 figure 1 shows the free-arm sunshade in the closed position;

figure 2 shows the free-arm sunshade in the open position;

10 figure 3 shows, on a larger scale and partly in section, a detail of the connection between the extension arm and the support or pole;

15 figure 4 shows a guide rod in cross section;

figure 5 shows the free-arm sunshade before the extension arm and the sunshade canopy have been pivoted; and

20 figure 6 shows the extension arm and the sunshade canopy in the pivoted position.

Methods of implementing the invention and industrial applicability

25 With the exception of the specific configuration of the means for pivoting the extension arm, the free-arm sunshade illustrated in figures 1 to 6 may be configured in accordance with EP-B1 0 741 531 and/or  
30 0 830 074.

The free-arm sunshade illustrated in the figures has a pole 4 which is anchored, for example, in a base 2 and serves as a support for an extensible extension arm 6.  
35 The latter is arranged on a carriage 8, which can be displaced along the pole 4, via an articulation 10. The extension arm 6 is supported at the top end of the pole 4 via a connecting rod 12. For this purpose, the

connecting rod is connected, on the one hand, to the extension arm 6 via an articulation 14 between the two ends of said extension arm and, on the other hand, to the top end of the pole 4 via a further articulation 16. By means of a crank 18 and of a circulating element 20 indicated in figure 3, the carriage 8 is moved up and down along the pole 4 from a rest position in figure 1, in which the extension arm 6 butts against the pole 4, into an extended position in figure 2. Details of the configuration of the circulating element 20 and of the crank mechanism 18 can be gathered from EP-B1 0 741 531. EP-B1 0 830 074 describes alternative possible ways of retracting and extending the extension arm.

15 Arranged at the end of the extension arm 6 is a sunshade canopy 22 which is closed when the extension arm is retracted, as is shown in figure 1, and is open when the extension arm is extended, as can be gathered from figure 2. There are likewise various possible ways of opening and closing the sunshade canopy, of which preferred ways can be gathered from the abovementioned specifications.

25 Details regarding the pivoting of the extension arm about its axis 24 and the components used for this purpose can be gathered from figure 3 in particular. The extension arm 6 is of tubular configuration and, at its end which is directed toward the pole 4, has a bearing ring 26 which is mounted pivotably on a supporting member 28. The supporting member 28 is connected to the carriage 8 such that it can be pivoted via an articulation 10. It is possible to arrange in the hollow extension arm 6, for example, a cable pull 30 for opening and closing the sunshade canopy 22.

Arranged on the outside of the bearing ring 26 is an adjustment ring 32 which can be pivoted about the

bearing ring and bears a latching bolt 36 in a housing 34. Said latching bolt is prestressed toward the bearing ring 26, and/or latching recesses 40 arranged therein, by means of a spring 38. The bearing ring 26  
5 has a plurality of circumferentially distributed latching recesses 40, of which the angle positions correspond to the adjustment positions of the extension arm 6 and thus of the sunshade canopy 22. Articulated on the housing 34 of the latching bolt 36, via a  
10 bearing bolt 42, is a guide rod 44, designed as a tube. Provided in the interior of the guide rod 44 is a traction element 46 which is connected to the latching bolt 36 in a pivotable manner via a coupling ring 48. The traction element 46 projects downward through the  
15 guide rod 44 and is provided there with a catch 49 which is assigned to an eyelet-like handle 50 of the guide rod 44, as can be gathered from figures 5 and 6 in particular. In the rest position, the guide rod 44 is latched to the carriage 8, and thus to the pole 4,  
20 via a fork-like arresting member 52, as can be gathered from figures 1 and 2 and also figure 6. By virtue of the guide rod 44 being arranged in an articulated manner on the housing 34 via the bearing bolt 42, the arresting action of the guide rod 44 on the arresting  
25 member 52 is maintained even when the extension arm 6 is moved out of its rest position in figure 1 into the extended position in figure 2 and vice versa. The guide rod is retained in a longitudinally displaceable manner in the fork-like arresting member 52 in order for it to  
30 be possible for it to follow the movements of the articulation bolts 10 and 42 when the extension arm 6 is retracted and extended.

The pivoting of the extension arm 6 and thus of the  
35 sunshade canopy 22 takes place as follows. If the sunshade canopy 22, and thus the extension arm 6, is located in the basic position, in which the sunshade canopy is located horizontally, then the guide rod 44

is released from the arresting member 52 and the latching bolt 36 is released from the latching recess 40 via the catch 49 and the traction element 46. With the extension arm 6 at rest and/or the sunshade canopy 22 horizontal, the guide rod 44 can then be pivoted laterally to the extent which corresponds to the subsequent pivot angle of the sunshade canopy and which is shown in figure 5. Thereupon, the latching bolt 36 is brought into engagement with an offset latching recess 40 (the latter nevertheless not being illustrated specifically), with the result that, when the guide rod 44 is pivoted in relation to the carriage 8 and/or the pole 4, the extension arm 6, and thus the sunshade canopy 22, is pivoted by the previously selected angle position, as is shown in figure 6. The pivoted position is fixed by virtue of the guide rod 44 being latched to the arresting member 52. By virtue of the guide rod 44 being released from the arresting member 52 and the guide rod 44 being pivoted back into the position shown in figure 5, it is possible to eliminate the pivoted position of the sunshade canopy 22 and/or the extension arm 6. Following release of the latching bolt 36 from the recess 40 by means of the traction element 46, the guide rod 44 can be pivoted back freely again into the basic position, in which the guide rod 44 latches on the carriage 8 by way of the arresting element 52. In this position, the latching bolt 36 also latches again in the corresponding basic-position latching recess on the bearing ring 26, with the result that the extension arm 6 and/or the sunshade canopy 22 is fixed in the horizontal, basic position.

The guide rod 44 therefore allows straightforward pivoting of the extension arm and thus of the sunshade canopy, the length of the guide rod being selected such that, even with the extension arm located at a high level, the guide rod 44 and the handle 50 are easily accessible. By virtue of the lever transmission, the

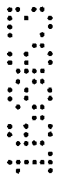
length of the guide rod 44 in particular also allows easy pivoting of the sunshade canopy 22 and/or the extension arm 6. This configuration allows round or polygonal sunshades of, for example, 3 to 5m in diameter to be handled easily.

- 5 According to figure 4, the guide rod has a D-like cross section with a rounded part 54 and a rectilinear base part 56. The basic position is preferably set up here such that the base part 56 is directed toward the pole 4 and/or the carriage 8. The shape of the guide rod can thus be better adapted to the profile of the pole 4 and of the carriage 8, and it provides a good grip for the eccentric bearing bolt 42 guided through the guide rod.

10

It will be appreciated by persons skilled in the art that numerous variations and/or modifications may be made to the invention as shown in the specific embodiments without departing from the spirit or scope of the invention as broadly described. The present embodiments are, therefore, to be considered in all respects as illustrative and

15 not restrictive.



LIST OF DESIGNATIONS

2	Base
4	Pole
6	Extension arm
8	Carriage
10	Articulation
12	Connecting rod
14	Articulation
16	Articulation
18	Crank
20	Circulating element
22	Sunshade canopy
24	Axis
26	Bearing ring
28	Supporting member
30	Cable pull
32	Adjustment ring
34	Housing
36	Latching bolt
38	Spring
40	Latching recess
42	Bearing bolt
44	Guide rod
46	Traction element
48	Coupling ring
49	Catch
50	Handle
52	Arresting member
54	Rounded part
56	Rectilinear base part

## THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. An extension arm which is arranged on a support such that it can be pivoted about its axis and which can be pivoted, and arrested in the pivoted position, by means of a hand lever, characterized in that the hand lever is designed as a guide rod which,
 

5 on the one hand, can be latched to the extension arm in different angle-of-rotation positions and, on the other hand, can be arrested directly or indirectly on the support.
2. The extension arm as claimed in claim 1, characterized in that the guide rod is
 

10 be latched to latching recesses of the extension arm by means of a latching bolt.
3. The extension arm as claimed in claim 2, characterized in that the latching bolt is prestressed toward the latching recesses by means of a prestressing spring.
- 15 4. The extension arm as claimed in claim 3, characterized in that the guide rod is arranged in an articulated manner on the latching bolt in order to actuate the latter.
5. The extension arm as claimed in claim 3, characterized in that the guide rod is
 

20 connected in an articulated manner to a housing of the latching bolt and contains a traction element which is connected to the latching bolt for the release of the latter.
6. The extension arm as claimed in claim 5, characterized in that the guide rod is provided with an axial through-passage opening for accommodating the traction element.
 

25
7. The extension arm as claimed in claim 5 or 6, characterized in that the traction element has a preferably eyelet-like handle which is arranged at the bottom end of the guide rod.
- 30 8. The extension arm as claimed in claim 5 or 6, characterized in that the traction element has a catch which is assigned to a handle of the guide rod.
9. The extension arm as claimed in one of claims 1 to 8, characterized in that the guide rod can be arrested on the support via an arresting member.



10. The extension arm as claimed in one of claims 1 to 8, characterized in that the guide rod has a D-like cross section with a rounded part and a rectilinear base part, the base part being directed toward the support.
- 5 11. The extension arm as claimed in one of claims 1 to 10, characterized in that the extension arm is hollow and designed for accommodating a traction element.
12. The extension arm as claimed in one of claims 1 to 11, characterized in that the extension arm is arranged on a supporting member such that it can be rotated about its  
10 axis, said supporting member being connected in an articulated manner to a carriage which can be displaced, and arrested, along the support, which has a pole.
13. The extension arm as claimed in claim 12, characterized in that the guide rod can be arrested on the carriage.
- 15 14. The extension arm as claimed in one of claims 1 to 13, characterized in that the extension arm is designed as an extensible free arm and the support is designed as a pole of a free-arm sunshade.
- 20 15. A pivotable extension arm assembly for a free-arm sunshade comprising:  
a support;  
an extension arm supporting a sunshade canopy of said free-arm sunshade and being arranged on said support so it can be pivoted on its axis into an axial pivot position;  
25 a hand lever connected to said extension arm to fix said extension arm in said axial pivot position, said hand lever including a guide rod that can be latched to said extension arm in different angle of rotation positions and fixed to said support.
16. A pivotable extension arm assembly comprising:  
30 a support;  
an extension arm arranged on said support so as to be selectably pivoted both on its axis and relative to said support to thereby achieve an axial pivot position and an arm angle position, respectively; and  
a hand lever connected to said extension arm to fix said extension arm in a given  
35 said axial pivot position, said hand lever including a guide rod that can be latched to



said extension arm in any one of a plurality of axial rotational positions and fixed to said support.

17. An extension arm substantially as hereinbefore described and with reference to  
5 the accompanying drawings.

Dated this twenty-second day of July 2004

Glatz AG  
Patent Attorneys for the Applicant:

F B RICE & CO

Patent  
Attorneys

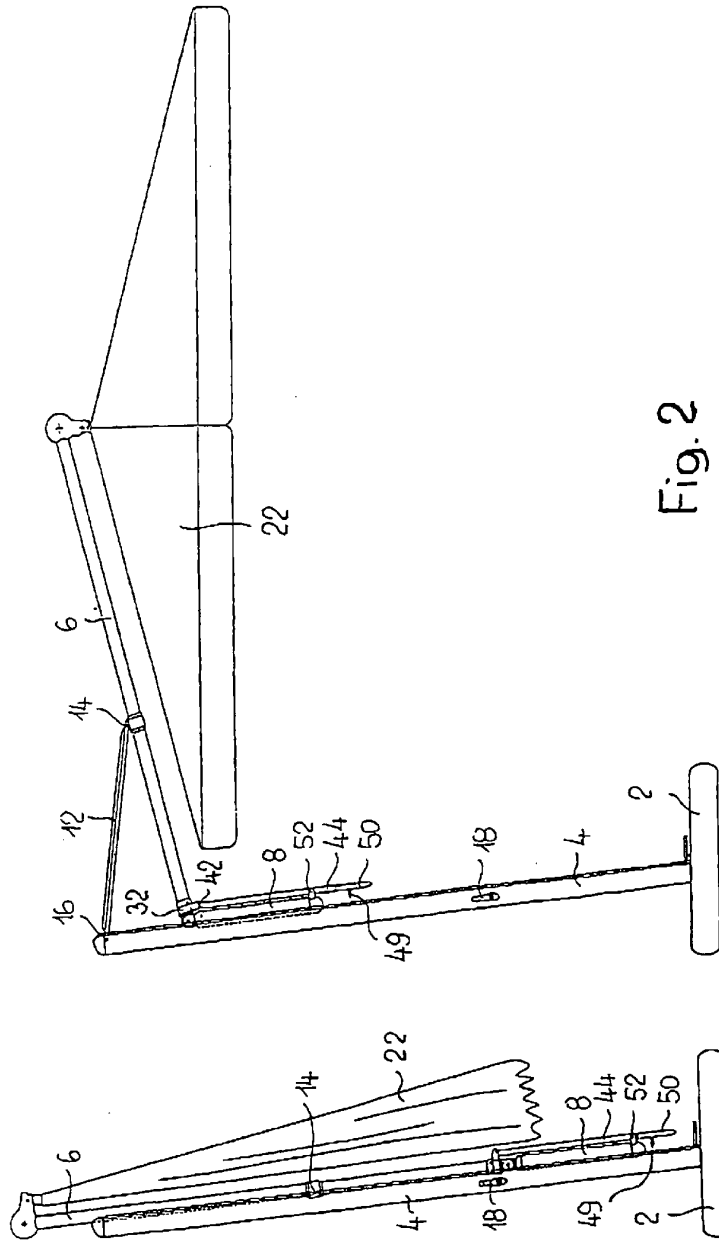


Fig. 2

Fig. 1

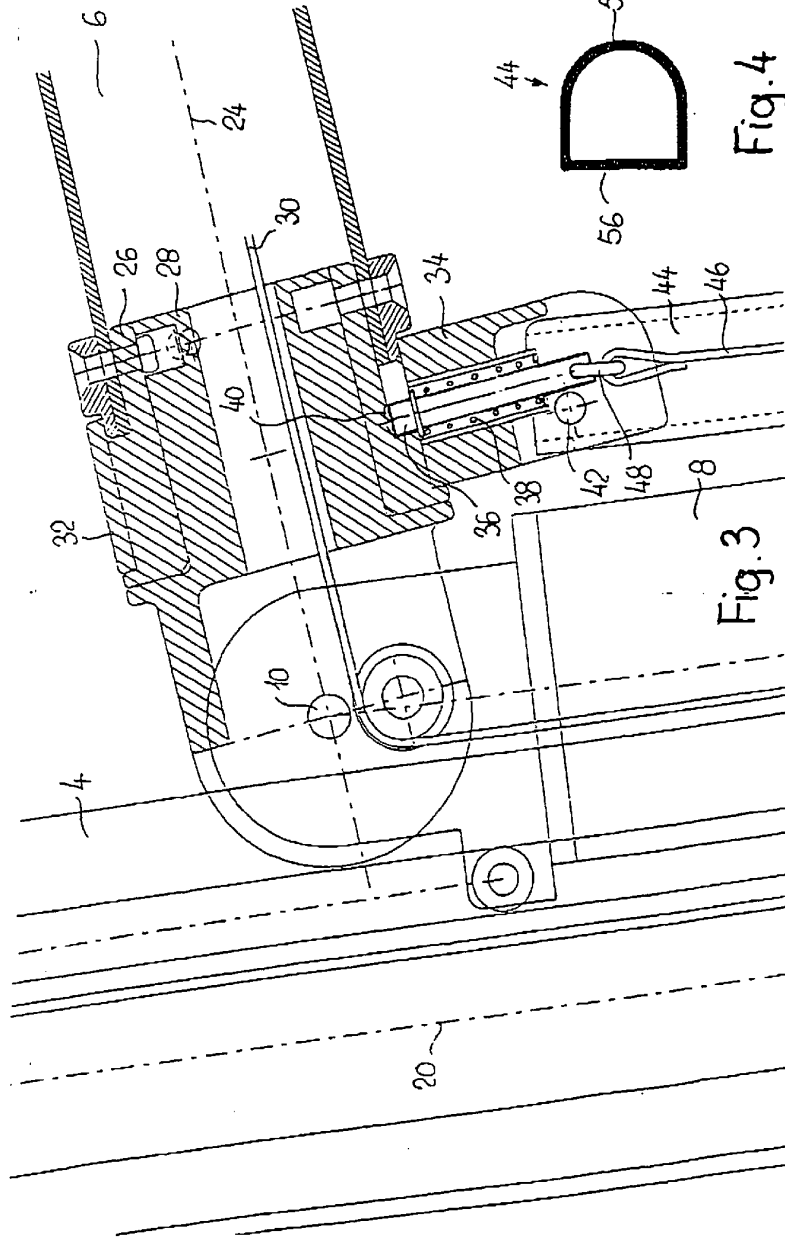


Fig. 4

Fig. 3

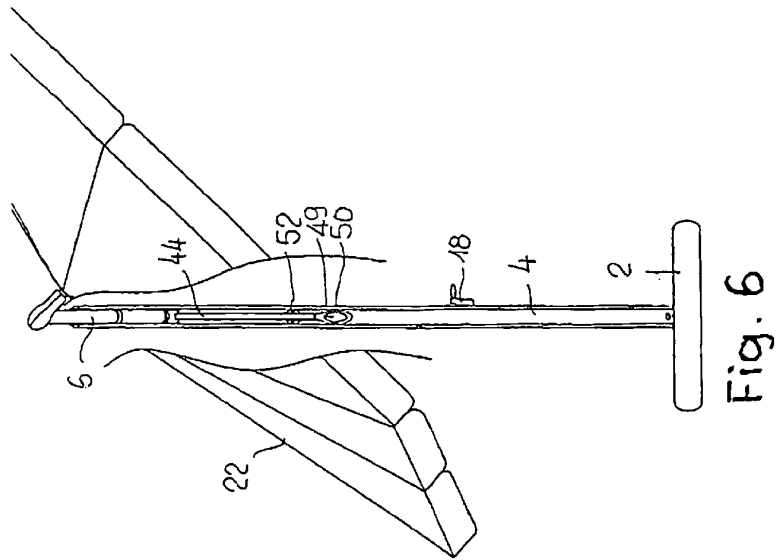


Fig. 6

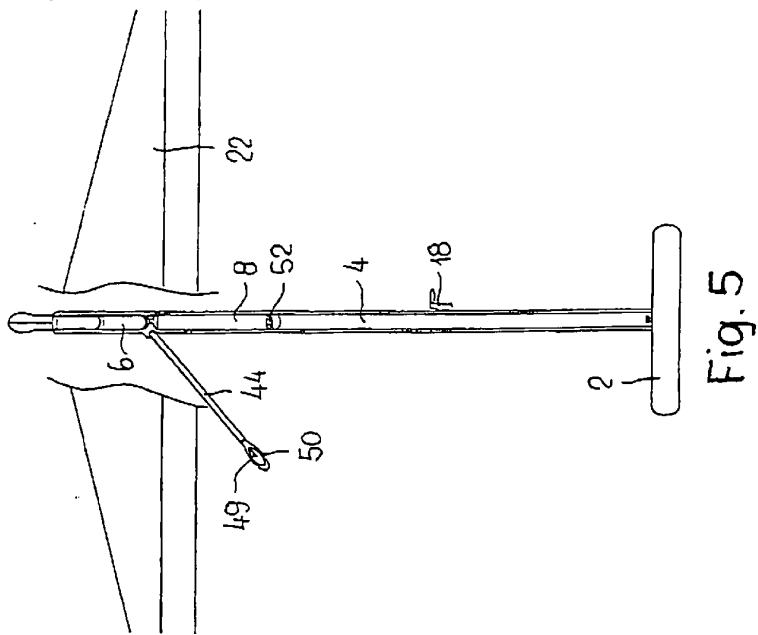


Fig. 5