

(19)



(11)

EP 2 963 207 A1

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:

06.01.2016 Bulletin 2016/01

(51) Int Cl.:

E04H 13/00 ^(2006.01)

E04F 21/18 ^(2006.01)

E04F 13/14 ^(2006.01)

(21) Application number: **15001927.1**

(22) Date of filing: **29.06.2015**

(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

Designated Validation States:

MA

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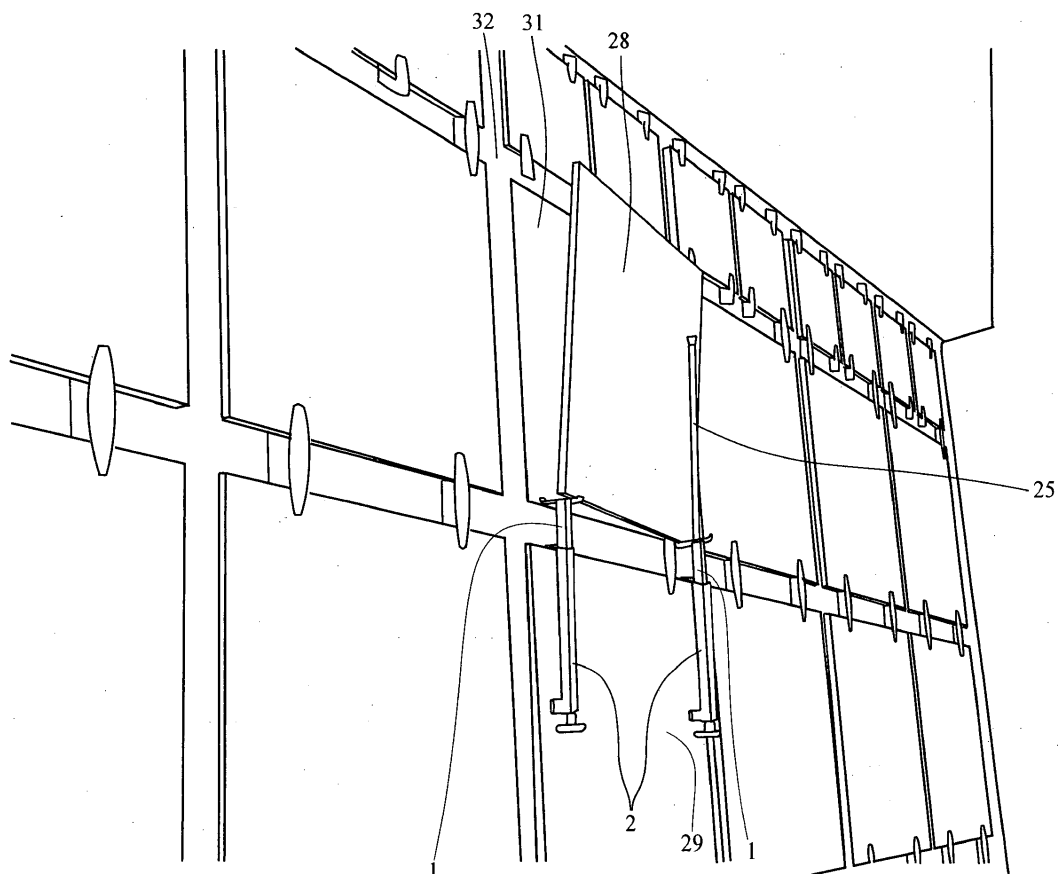
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(30) Priority: **02.07.2014 IT PD20140174**

(54) **AUXILIARY DEVICE FOR POSITIONING MARBLE FOR CEMETERY NICHES**

(57) This invention concerns a device for aiding the positioning of marble slabs that are place in front of cemetery niches.



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Description

[0001] The field of this invention concerns a device to aid the positioning of marble slabs that are positioned at the front of cemetery niches.

Prior art

[0002] Knowledge of this object is part of our common experience. These are marble slabs that are fixed on the front of individual cemetery niches.

[0003] These marble slabs contain the various inscriptions and accessories, like for example small vases for holding flower arrangements.

[0004] Very often there are also light shrines or small candles to provide continuous lighting.

[0005] Precisely to power these small lights, the cemetery administration makes a low voltage power supply available, generally for a small annual fee.

[0006] This power supply, then, in order to prevent unsightliness, directly crosses the accessory fixed solidly to the marble slab, and the slab itself, through a hole specially made and out of sight, to connect to the part behind.

[0007] This the well-known part of the common experience.

[0008] Another less well-known part, except to those working in the field, concerns the cemetery technology.

[0009] This technology provides, for each single site, a certain approved arrangement of the customisable slabs, arranged in lines and in columns to form a regular pattern.

[0010] These slabs are given to operators when needed for personalisation and generally a few days after they are delivered, once the personalisation is finished, like the various inscriptions and various adornments and lighting devices, they are fixed at the front of the specific niche.

[0011] To carry out the fixing, operators have to handle the single slab that has already been customised very carefully, since it has been polished and finished with numerous protruding elements, which absolutely could not withstand any strains and/or bumps.

[0012] So, this slab is brought near to its definitive site, raised up in order to check its overall dimensions, very often lain on the floor for the necessary adjustments, and for any work on the masonry structure for fixing, and which defines and compartmentalises the various niches.

[0013] Also in successive operations, for definitively fixing the slab, the operators need to keep the slab raised, at the place where it will be definitively secured, while another operator has to take care of the last tasks, like the electrical connection for example.

[0014] Once all the necessary work is finished, the slab is positioned and fixed definitively to the structure.

[0015] It is clear from the operations described above how laborious and demanding it is to definitively position

marble slabs for cemetery niches.

[0016] In fact, there is no room for any errors that could ruin the slab itself or those adjacent to it, and above all the positioning needs to be carried out expertly both regarding the vertical alignment and also regarding the horizontal placement, but above all respecting the required distance between one slab and another, especially those adjacent.

[0017] The personnel needed, then, for such tasks is very often composed of different people: the personnel that have to lift up the slab, the personnel that have to keep these slabs at the same height as and near to the specific niche, while others take notes of the requirements, the personnel who, once the slab has been brought back down to the ground, carry out the necessary modifications and finally those who, before the definitive fixing, take care of the connections and adaptations at the ends, like for example the electrical connection.

[0018] For all these reasons and others that will become clearer in the description below, this method for carrying out the installation and fixing work is laborious, approximate, wasteful of time and equally risky for the integrity of the slab itself and those nearby.

Presentation of the invention

[0019] The purpose of this invention is to overcome one or more of the drawbacks of the prior art.

[0020] Another object of this invention is to make available an aid for positioning marble slabs, which are located and positioned at the front of each cemetery niche, and which makes installation much quicker.

[0021] A further object of this invention is to make available an aid for positioning marble slabs of cemetery niches that requires fewer personnel.

[0022] Another object of this invention is to make available an aid for positioning marble slabs of cemetery niches that makes installation easy and precise.

[0023] Another important object of this invention is to make available an aid for positioning marble slabs of cemetery niches that makes installation safe, and which can be carried out uninterruptedly or at a later time, allowing also for the work to be interrupted for breaks.

Description of the invention

[0024] One or more the objects above is achieved with the invention as set out and characterised in the attached claims.

[0025] In particular the device for aiding the positioning of cemetery niche marble slabs is composed of at least a first element for supporting said marble slab at a pre-set height, capable of supporting its weight in a stable manner, and by at least a second element capable of connecting to said first element in a mechanical or hydraulic manner, said second element being capable of keeping itself stable at a set height and, by means of an adjustment device, of bringing said first element to a height

varying the degree of connection between said first and said second element.

Advantageous characteristics of the invention

[0026] Advantageously said first support element has a laminar element for supporting the slab, where the slab on said laminar element can move, sliding in a direction orthogonal to that varying the height. Opportunely, said laminar support element, on at least one end has a protruding tooth, as an end stop, that limits the travel of the slab on said laminar element, to prevent the slab sliding and falling and eventually to provide a precise coasting distance of the above-mentioned slab with respect to the masonry structure.

[0027] Validly, said first element connects with the second element in an adjustable and telescopic manner.

[0028] Furthermore, said adjustable and telescopic connection is realised using a hand-wheel connected to a threaded bar that directly engages a bolt solidly connected to the first element, or else with a toothed wheel and worm screw kinematic mechanism or else a bevel gear transmission.

[0029] An economic and equally valid variant of the above-mentioned connection consists of a series of holes, eventually offset regarding height on two sides of the top element with a pin that is inserted in them and acts as a stop on the top end of the tubular profile of the second element.

[0030] Advantageously, said second element keeps its height, exploiting the lower slab that has already been positioned and fixed.

[0031] The above-mentioned advantageous characteristic is possible since connected solidly to the top part of said second element is a tooth, opportunely profiled that rests on and grasps said lower slab. Alternatively, the above-mentioned advantageous characteristic is possible since said second element is accessorised with a sucker that can join to the above-mentioned lower slab.

[0032] Usefully, the above-mentioned tooth on top of said second element is shaped like a hook, being able to also take the part of the rear façade of the slab underneath the one concerned; eventually said slab underneath before the various operations is slightly offset with respect to the masonry structure.

[0033] Another advantage consists of another element, a rod with a stop, that is capable of extending the height of the first element, in such a way it can rest the top part of the slab to be positioned and keep it there safely for the time needed for the various operations. Evidently, this rod, which connects to one of the elements that constitute this invention and preferably the top one, could be one with the top element itself; It is really clear that a configuration with several elements renders the device more compact and easier to handle.

[0034] It is preferable that the above-mentioned aids are used as a pair located near the lower edge of the slab to be installed.

Brief descriptions of the drawings

[0035] The technical characteristics of the invention, according to the above-mentioned purposes, can be clearly seen in the content of the claims below and the advantages will be even clearer in the detailed description that follows, which refers to the attached drawings, which represent an example of a preferred embodiment that should in no way be considered limited to such.

- fig. 1 shows a pair of devices of the invention that when applied to a slab of marble that has already been fixed support at their top a slab to be positioned and fixed; this slab rests with its top edge on a rod protruding from one of the above-mentioned devices;
- fig. 2 shows a first version of the device of the invention with the first element inserted in a telescopic manner inside the second element, and at the lower end of the second element we can see the adjustment hand-wheel.
- fig. 3 shows a second version of the device of the invention with a first element inserted in a telescopic manner inside the second element, and in this case the adjustment of the connection between the first and the second element is obtained using a pin in one of a series of holes where at least the top element is ????
- fig. 4 shows a perspective view of the detail of fig. 3 concerning the adjustment of the connection.
- fig. 5 shows a third variant of the device of the invention, which differs from the first version with the adjustment kinematic mechanisms;
- fig. 6 and fig. 7 show an extension rod of the support and/or rest of the top of the slab.

Detailed description

[0036] The aid for positioning the marble slabs 28 of cemetery niches 31 is formed of a first element 1, 12 and a second element 2, 13 connected to each other.

[0037] Preferably this connection is telescopic with the rod 3, 14 of the first element 1, 12 that can move sliding inside the tubular profile 4, 15 of the second element 2, 13.

[0038] In particular, the first element has the function of supporting the weight of the slab to be positioned, which is supported at its lower part by a laminar support element 5, 16.

[0039] On this laminar support element 5, 16, the slab 28 can be made to slide easily by the operator, in a direction orthogonal to the direction changing the height.

[0040] In this way, after having brought the slab 28 to the desired position, it is then moved by the operator making it slide on the support 5, 16 to bring it as near as possible to the reference position, but it can also easily be distanced to allow the operator to work behind the slab 28 itself.

[0041] In order to guarantee safe conditions, the movement along the laminar support element is limited at the front, by a protruding tooth 6, 17 and at the rear by an end stop 7, 18.

[0042] With these stops, the operator can always be sure that shifting the slab 28 will never go beyond the support.

[0043] To keep the second element 2, 13 at a stable height, the second operator preferably connects to the lower slab 29, which is already fixed and positioned.

[0044] Above the rod 4, 15 of the second element 2, 13 there is a hook element 8, 19 that rests on the lower slab 29, and in particular on the top edge of the lower slab 29. To ensure a solid and valid grip on the lower slab 29, said hook element 8, 19 is profiled with a catch or hook 9, 20 that pushes out towards the rear part of the lower slab 29.

[0045] Eventually this connection of the second element 2, 13 with the lower slab 29 that is already fixed in place is possible also using sucker elements.

[0046] The adjustment of the connection between the first and second element, preferably between them telescoped, can occur with a kinematic mechanism or a mechanical or hydraulic system.

[0047] The kinematic mechanisms can be various and diverse, like for example a threaded bar, that is operated externally on the second element by a handle 11 that engages a threaded part on the first element, or else a pinion set 30 or a toothed wheel and worm less screw transmission, etc.

[0048] In all these cases, however, movement occurs very simply, is of the self-blocking and reversible type, and allows you to find the exact position of the slab 28 to which it should be supported for all the preliminary fixing operations.

[0049] A different type of adjustment, for example mechanical, can be that of a series of holes 22, 24 engaged by a pin 23.

[0050] To attain a continuity of regulation, the holes can be offset on two sides of the various elements.

[0051] In the eventuality that the slab 28 needs to remain at a height, it can be supported with its rear part on a rod 25, which preferably extends the first element 1, 12. Said rod inserts in, or connects to, its lower part 27 up to an end stop 26 with the first element of the device.

[0052] Eventually said first element 1, 12 and said rod 25 can also be a single body, nevertheless the breakdown into several elements makes the aid more compact and more manageable.

[0053] In fact, to be able to operate it both on the left and on the right, the operator can omit the rod 25 corresponding to more space between the slab 28 and the niche 31 or the masonry structure 32.

[0054] To counter the bending and/or tilting moments of the slab 28 on the device, and to keep the device aligned and at a distance in a vertical manner, the lower part of the second element 2, 13 is a valid support 10, 21 on the lower slab 29 that has already been positioned.

Eventually also this support 10, 21 can be adjustable, with an easy extension of this adjustment using a threaded rod or adjustable screw, in order to use the device vertically, preferably parallel to the slabs that have already been positioned.

[0055] In the eventuality that the distance between a slab and the one adjacent to it is minimal, the front protruding tooth 6, 17 can be done without, leaving the laminar support element 5, 16 as a flat head, which can easily be removed after said slab has been fixed in place.

Claims

1. Auxiliary device for positioning marble slabs for cemetery niches, composed of at least one first element (1, 12) for supporting at a height said marble slab (28) at a height, capable of supporting its weight in a stable manner, at least a second element (2, 13) capable of joining to said first element (1, 12) in a mechanical or hydraulic manner, where said second element (2, 13) can stay at a pre-set height in a stable manner and, by means of an adjustment device, can bring said first element (1, 12) to a height by varying the degree of association between said first (1, 12) and said second element (2, 13); eventually the above-mentioned device can be used as a pair, each one located near the bottom edge of the slab (28) to be installed and appropriately spaced from one another.
2. Auxiliary device for positioning marble slabs for cemetery niches according to claim 1, **characterised by** the fact that said first supporting element (1, 12) has, a laminar element (5, 16) for supporting the slab (28), where on said laminar element (5, 16) the slab (28) can slide in an orthogonal direction to that of the variation of the height.
3. Auxiliary device for positioning marble slabs for cemetery niches according to claim 2, **characterised by** the fact that said laminar support element (5, 16), on at least one end has a protruding tooth (6, 17), or a limit stop element (7, 18), that limits the travel of the slab (28) on said laminar element (5, 16).
4. Auxiliary device for positioning marble slabs for cemetery niches according to claim 1, **characterised by** the fact that said first element (1, 12) is joined to the second element (2, 13) in an adjustable and telescopic manner.
5. Auxiliary device for positioning marble slabs for cemetery niches according to the previous claim, **characterised by** the fact that said adjustable and telescopic joint is created using a hand-wheel (11) connected to a threaded bar that directly engages a bolt solidly connected to the first element (1, 12), or else

with a kinematic motion of the toothed wheel variety and an endless screw or else conic torque transmission (30).

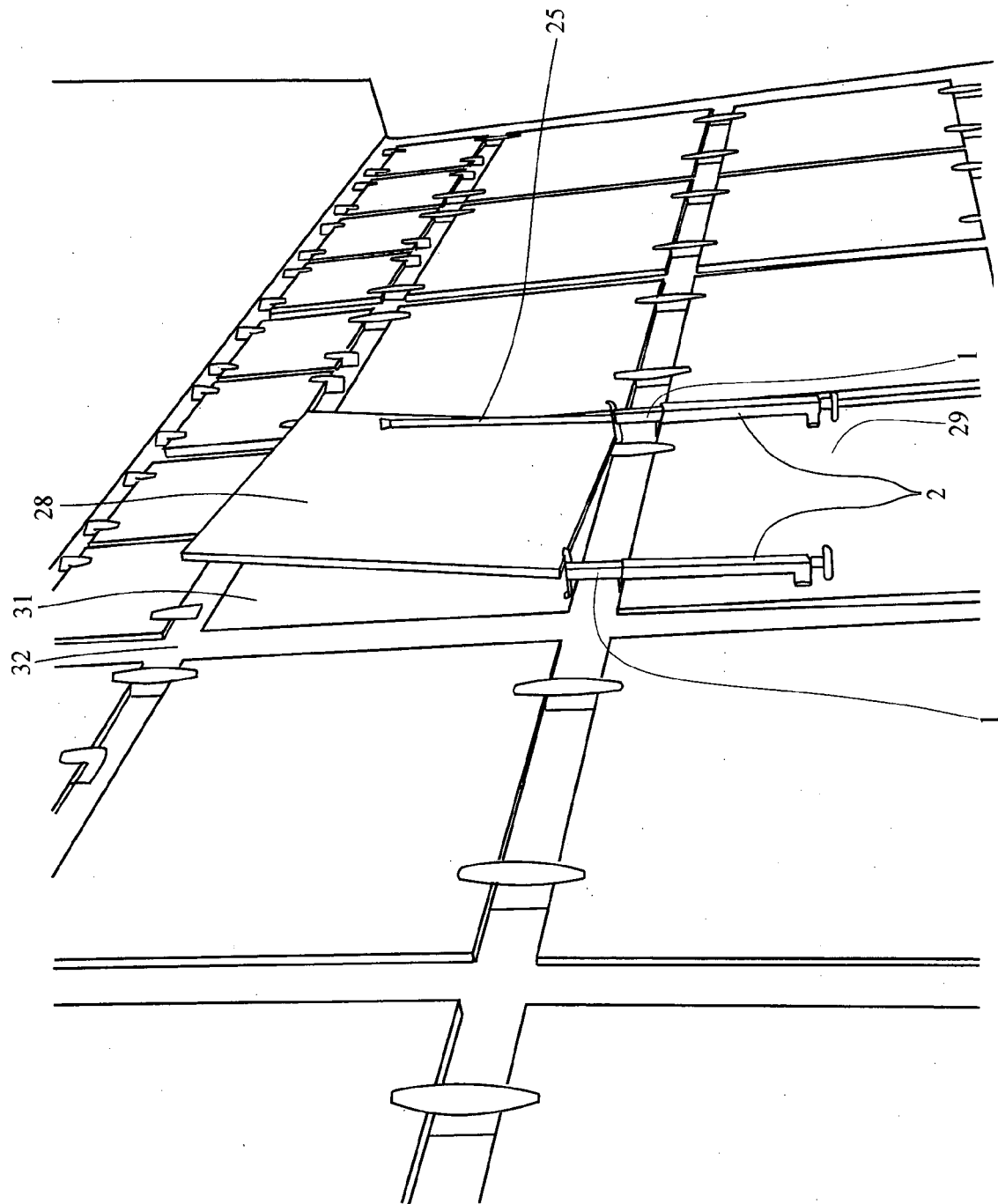
6. Auxiliary device for positioning marble slabs for cemetery niches according to the claim 4, **characterised by** the fact that said joint is composed of a series of holes (22, 24) on the rod of the first or the second element, eventually offset with regard to the height on the two sides of the top element with a pin (23) that is inserted in it and acts as a stop. 5
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7. Auxiliary device for positioning marble for funeral niches according to claim 1, **characterised by** the fact that said second element (1, 12) keeps its height by exploiting the bottom slab (29) that has already been positioned and fixed. 15

8. Auxiliary device for positioning marble slabs for cemetery niches according to the previous claim, **characterised by** the fact that solidly connected to the top part of the second element (2, 13), there is an appropriately profiled tooth or a coupling element (8, 19), that rests on and catches onto said lower slab (29), eventually shaped as a hook so as to be able to secure on the rear side of the lower slab (29), which is already fixed and beneath the one that is the subject of the positioning. 20
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9. Auxiliary device for positioning marble slabs for cemetery niches according to claim 7, **characterised by** the fact that said second element (2, 13) is accessorised with a suction cup that can fix onto the above-mentioned lower slab (29). 30
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10. Auxiliary device for positioning marble slabs for cemetery niches according to claim 1, **characterised by** the fact that said device includes a rod (25) with a stop (26), capable of extending the height of the first element (1, 12), so as to support the top part of the slab (28) to be positioned, and hold it safely for the time needed to complete the various operations. 40
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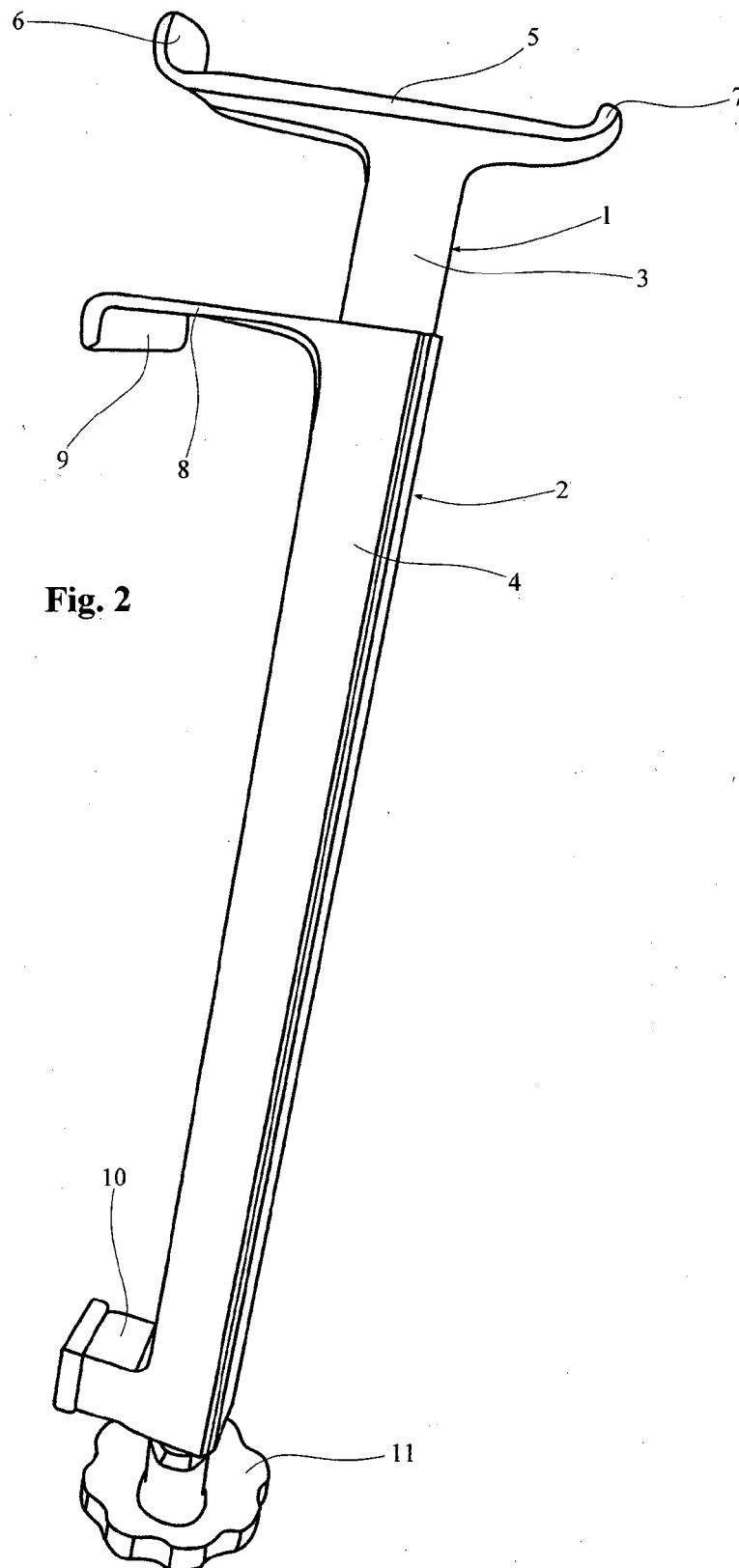
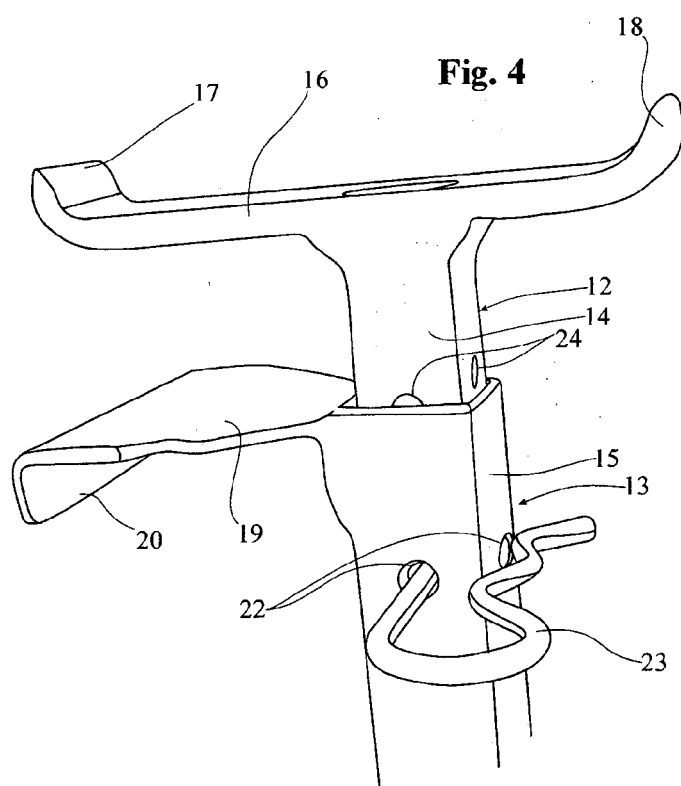
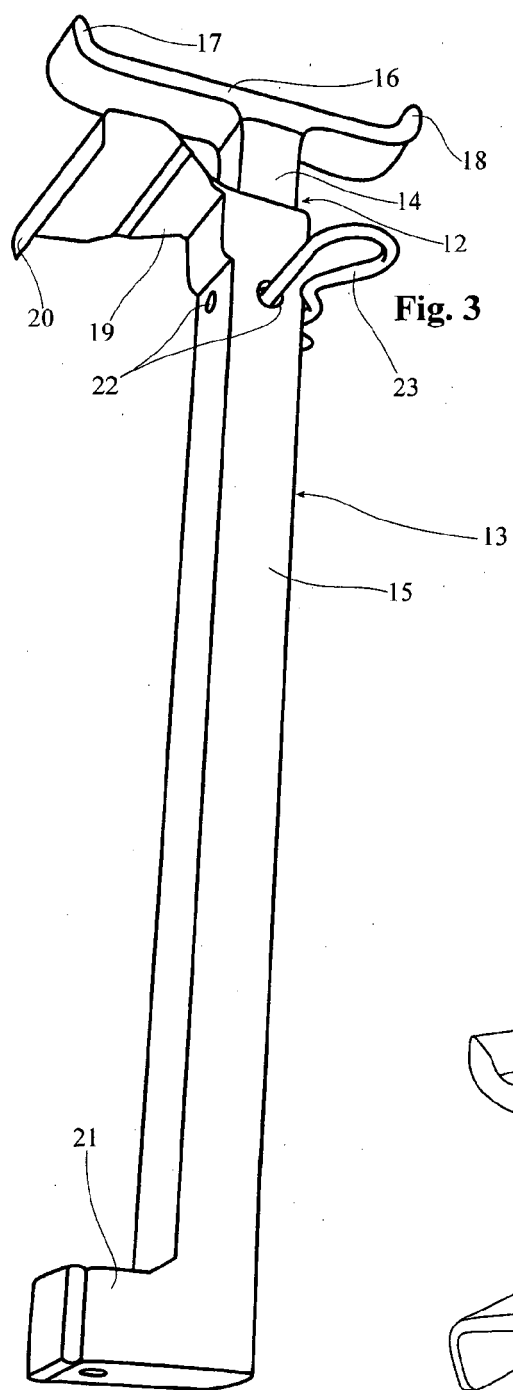


Fig. 2



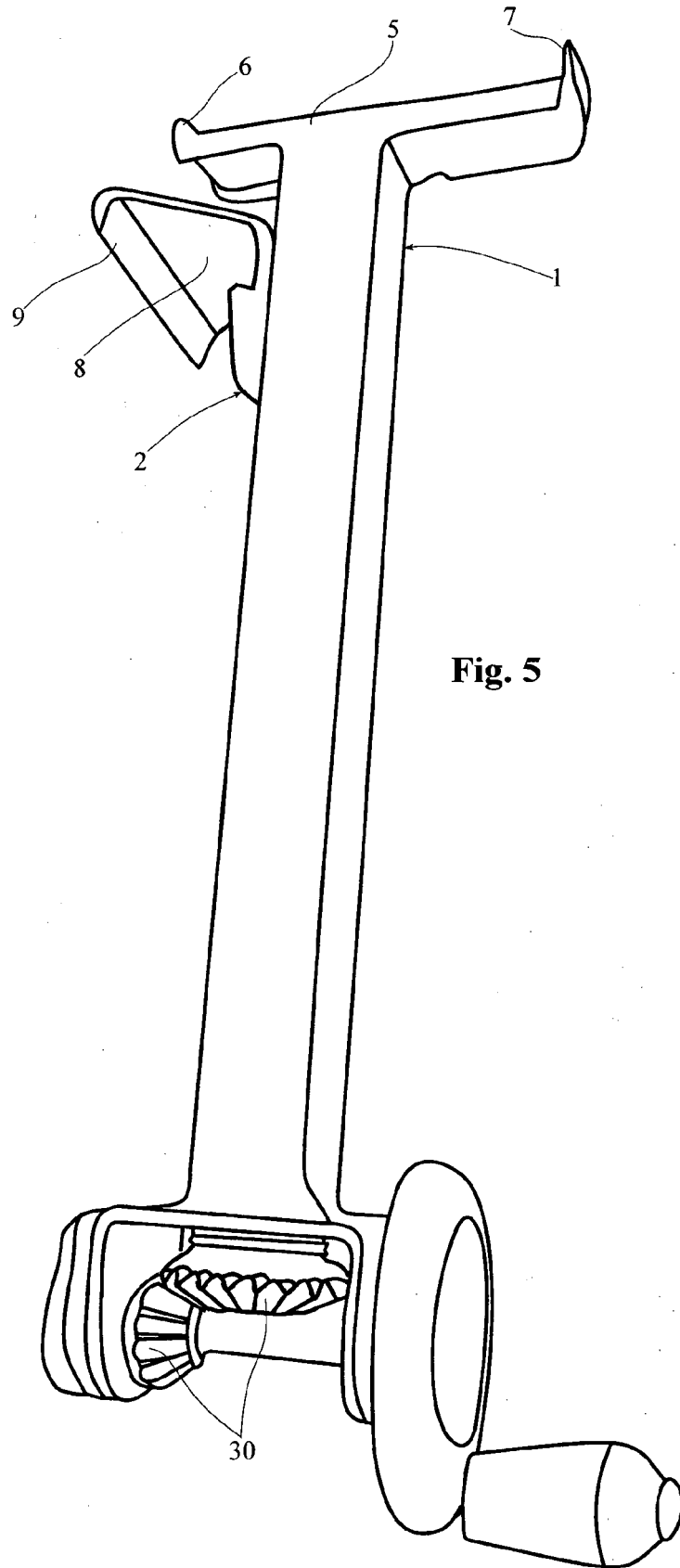
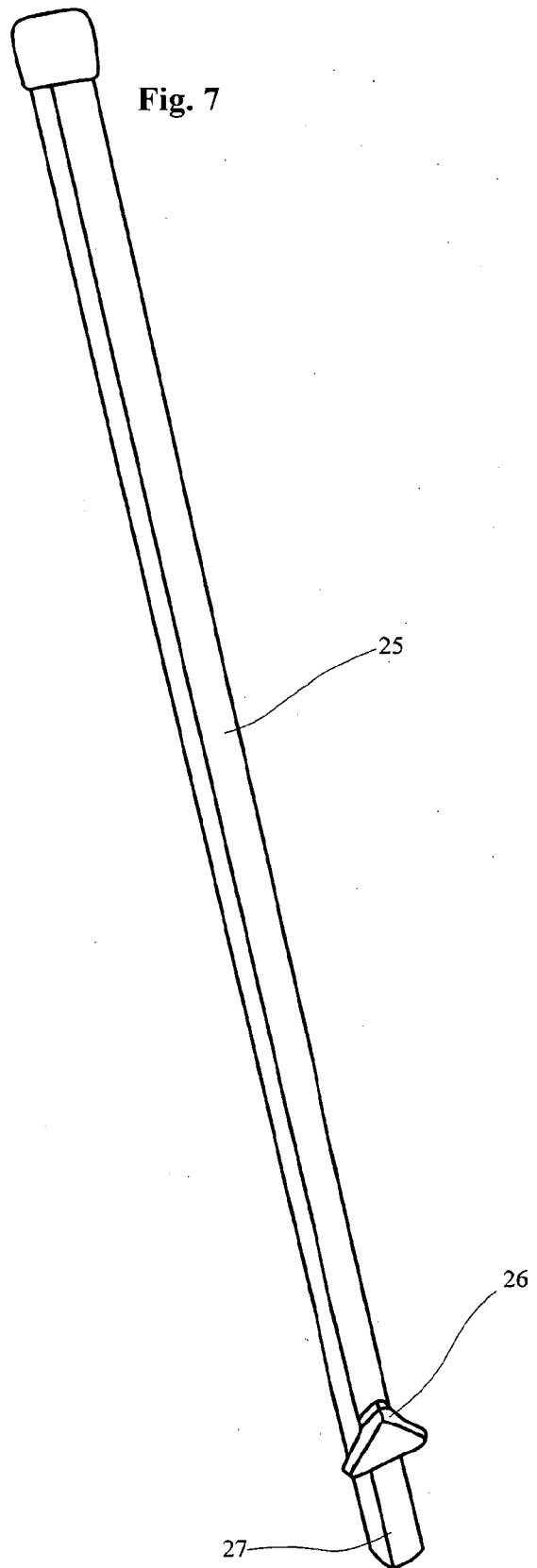
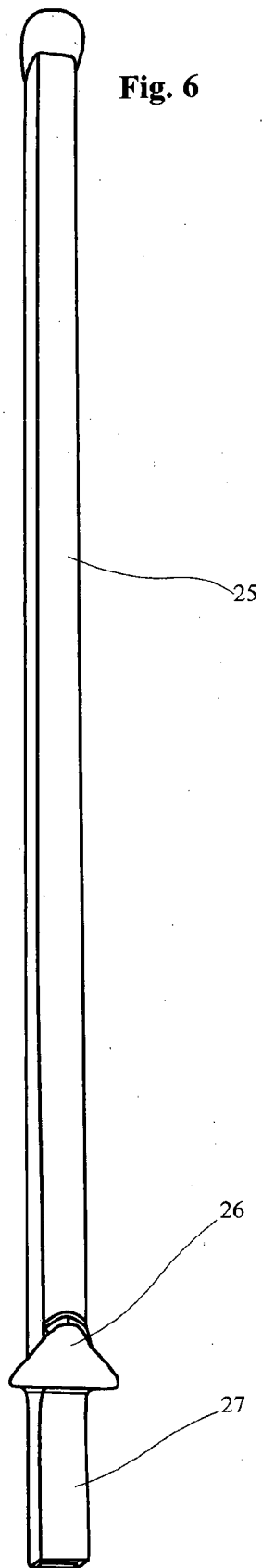


Fig. 5





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Application Number
EP 15 00 1927

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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 28 October 2015	Examiner Stefanescu, Radu
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82