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(54) A TOOL FOR LEVELING A CONCRETE LAYER OR THE LIKE IN CONSTRUCTION WORK

(57) A tool that allows constant and regular leveling of a concrete layer or the like in construction work, characterized in that it comprises:
- a fixed part (10) intended to be placed against a reference surface (M) with respect to which the required leveling is established;
- a movable part (11), movable with respect to the fixed part (10) able to move along the body of the fixed part (10) from a rest position up to a position of maximum stroke and configured to adjust and define a required leveling height (L), the movable part (11) is associated with a straightedge (S) to be able to achieve the leveling of concrete layers or the like;
- locking means (12, 13) of the movable part (11) to the fixed part (10) in the position that defines the required leveling height (L).

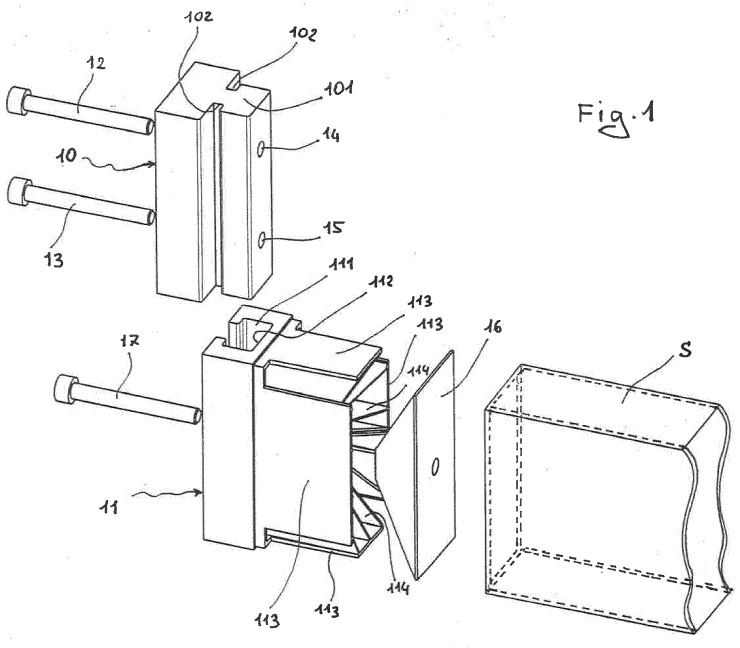

Fig.1

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Description

[0001] The present invention relates to a tool for leveling a concrete layer or the like in construction work.

[0002] Currently, the task of leveling the concrete layer, so-called screed, especially in balconies, on which to lay tiles, is not always easy and quick to implement. The operator manually maneuvers a straightedge above the concrete layer, and this operation is quite difficult and often executed with improvised systems, as it is necessary to ensure a constant and regular leveling of this layer depending on the thickness of the tiles to be laid. In the case of balconies, the leveling must also be carried out in relation to the pre-existing outer perimeter marble edging in order to ensure that the tiles are coplanar with perimeter edging.

[0003] The present invention aims to overcome these drawbacks and to provide a tool for leveling, in a constant and regular manner, a concrete layer or the like, for construction work and to enable this operation to be quick and reliable, as well as easy and convenient for the operator, thus providing a practical, simple and advantageous solution, both in implementation and convenience of use.

[0004] Another object is to allow the tool to be used for producing plasterwork for walls in general, in this case facilitating the required leveling of the plaster layer, thus constituting an effective solution of use.

[0005] These objects are obtained by the invention that provides a tool that allows constant and regular leveling of a concrete layer or the like, in construction work, characterized in that it comprises:

- a fixed part intended to be placed against a reference surface with respect to which the required leveling is established;
- a movable part with respect to the fixed part, able to move along the body of the fixed part from a rest position up to a position of maximum stroke, and configured to adjust and define the required leveling height, the movable part is associated with a straightedge element to be able to achieve the leveling of concrete layers or the like;
- locking means of the movable part to the fixed part in the position that defines the required leveling height.

[0006] These and other characteristics of the invention and the advantages that derive from it will become evident from the detailed description of an embodiment of the invention that follows, illustrated simply by way of example, with reference to the attached drawings, wherein:

- Figure 1 illustrates a tool according to an embodiment of the invention, in exploded perspective view;
- Figure 2 illustrates the same tool, in exploded front view;
- Figure 3 is a view of the same tool in perspective view illustrating the application of the straightedge element;
- Figure 4 is a side view of the region of the movable part intended to be coupled with the straightedge;
- Figure 5 illustrates, in front view, the tool in the leveling position of use with the straightedge applied.

[0007] With reference to the figures, in the illustrated embodiment, the tool according to the invention comprises a fixed part 10 intended to be supported on a reference surface M, for example, the outer perimeter marble edging of a balcony, with respect to which the required leveling of a concrete layer of application of an article to be laid is established, for example tiles, slabs or the like.

[0008] The tool further comprises a movable part 11 movable with respect to the fixed part 10, which is able to move along the body of the fixed part 10 from a rest position up to a position of maximum stroke, and capable of adjusting and defining the desired height L of leveling.

[0009] Said movable part 11 is intended to be associated with a straightedge S in order to achieve the leveling of the concrete layer or the like.

[0010] Locking means 12, 13 of the movable part 11 to the fixed part 10 are also provided in the position that defines the required leveling height.

[0011] The fixed part 10 has a region 101, longitudinally, which is coupled, in a complementary and movable manner, within a corresponding seat 111 of the movable part 11, so that said region 101 of the fixed part 10 constitutes a guide for the translatory motion of said movable part 11 with respect to the fixed part 10.

[0012] The said locking means 12, 13 of the movable part 11 to the fixed part 10 comprise, for the illustrated embodiment, two screws 12, 13, which can be inserted from the outside into transverse through-holes, respectively, 14 and 15, so that with their tip they adhere and press against an inner wall 112 of the sliding seat 111 of the movable part 11, thereby causing the locking.

[0013] The movable part 11 can assume a rest position wherein at least one of its sides parallel to the reference surface M is aligned with an adjacent side of the fixed part 10 and an operative position wherein the movable part 11 is projecting with respect to the fixed part 10, towards the working plane and with respect to the reference surface M, by a length L, which defines and establishes the required leveling height.

[0014] The straightedge S can be provided as a single piece with the movable part 11, from the manufacturing step, or said straightedge S can be provided with a detachable and interchangeable coupling with respect to the movable part 11.

[0015] In the illustrated embodiment, the movable part 11, on the side opposite to that which slides on the fixed part 10, has a region intended to be detachably and interchangeably coupled with the straightedge element S, providing the section of that region complementary with that of the straightedge S.

[0016] For the illustrated embodiment, the detachable and interchangeable coupling of the region of the movable part 11 with the straightedge element S, can be envisaged by providing this region with a box-like structure whose walls 113 are independent and elastically-deformable, and free to expand outwards by the effect of a frustoconical wedge-shaped element 16 when it penetrates within said box-like structure, with which cooperating radial fins 114 adhere to the walls 113, and of overall conformation complementary to the frustoconical element 16, so that advancing of this element 16, caused by a screw 17, which can be inserted from the outside on the inner wall 112 of the sliding seat 111 of the movable part 11 and engaging in a through-hole 19 in the frustoconical element 16, causes outward expansion of the walls 113 of said box-like structure, which press against the walls of the straightedge S inserted on that region, thereby causing the locking of the straightedge S to said region of movable part 11.

[0017] This advantageously allows the interchangeability of the straightedge S, of different lengths depending on the various contingent needs of use.

[0018] It is understood, however, that according to non-illustrated embodiment variants, the detachable and interchangeable coupling between the said region of the movable part 11 and the straightedge element S may be obtained in any other suitable manner, so that their association allows, in any case, the removability and interchangeability of the straightedge S.

[0019] The screw 17 is provided through a hole 18 in the movable part 11 and whose head can be arranged to disappear within a relative seat formed in the wall 112 of the movable part 11, so as not to obstruct the sliding of the movable part 11 on the guide 101 of the fixed part 10.

[0020] For the illustrated embodiment, the cross-section of said region 101 of the fixed part 10 intended to be coupled with the movable part 11 has a T-shaped cross-section, while the seat 111 of the movable part 11 with which the region 101 is coupled has an essentially U-shaped cross-section, with the ends facing inwards, with two sliding sections that engage within two corresponding lateral grooves 102 formed in the intermediate part of said T, so as to form, together, a sliding guide for the movable part 11.

[0021] The section of the movable part 11 which is projecting with respect to the fixed part 10 towards the working plane and with respect to the reference surface M, for example, marble edging for the illustrated embodiment example, which defines and establishes the leveling height L, corresponds to the thickness of an article to be laid on the leveled application layer, this article consisting of tiles, slabs, or the like, or any other article to be laid, for example self-locking, on the leveled application layer.

[0022] The tool can be used to level application layers of the article to be laid, which can consist of any suitable material for application of the article to be laid and suitable for this object, such as concrete, mortar, sand, substrate or other suitable material, for example adhesive or the like.

[0023] The tool can be used to level a concrete layer, for example so-called screed, especially balconies, or floorings in general, in this case, the fixed part 10 refers, for example, to the marble perimeter edging M, of the balcony.

[0024] According to an advantageous characteristic of the invention, the tool can also be used to produce plasterwork for walls in general, by moving the fixed part 10 to rest against a suitable reference surface, for example, counterframes in the case of plasterwork at the side stiles of window frames, or other suitable reference surfaces in the case of plasterwork on other walls, thus allowing the required leveling of the plaster layer.

[0025] From the above, it is therefore apparent that the invention is not limited to the embodiment described and illustrated simply as a non-limiting example, but also includes models that are equally useful using the same innovative concept.

[0026] It is therefore understood that the present invention can be varied and modified, in its entirety and in its details, depending on the specific requirements and manufacturing and application needs, especially constructively and within the technical and functional equivalents, without abandoning the innovative concept described above and according to the following claims.

Claims

1. A tool for leveling a concrete layer or the like in construction work, **characterized in that** it comprises:

   - a fixed part (10) intended to be placed against a reference surface (M) with respect to which the required leveling is established;
   - a movable part (11), able to move with respect to the fixed part (10) from a rest position up to a position of maximum stroke, and configured to adjust and define a required leveling height (L), the movable part (11) being configured to be associated with a straightedge (S) for leveling concrete layers or the like;
   - locking means (12, 13) for locking the movable part (11) to the fixed part (10) in the position that defines the required leveling height (L).

2. A tool according to claim 1, **characterized in that** the fixed part (10) has a region (101), longitudinally, which is coupled, in a complementary and movable manner, within a corresponding sliding seat (111) of the movable part (11), so that said region (101) of the fixed part (10) constitutes a guide for the translatory motion of said movable part (11) with respect to the fixed part (10).

3. A tool according to one or more of the preceding claims, **characterized in that** said locking means (12, 13) comprise at least one screw (12, 13), which can be inserted from the outside into a respective transverse through-hole (14, 15) of the fixed part (10), so that the tip presses against an internal wall (112) of the sliding seat (111) of the movable part (11), thus resulting in the locking.

4. A tool according to one or more of the preceding claims, **characterized in that** the movable part (11) can assume a rest position wherein at least one of its sides parallel to the reference surface (M) is aligned with an adjacent side of the fixed part (10), and an operative position wherein the movable part (11) is projecting with respect to the fixed part (10), towards the working plane and with respect to the reference surface (M), by a length (L) defining the required leveling height (L).

5. A tool according to one or more of the preceding claims, **characterized in that** the straightedge (S) is provided as a single piece with the movable part (11), or said straightedge (S) is provided with a detachable and interchangeable coupling with respect to the movable part (11).

6. A tool according to one or more of the preceding claims, **characterized in that** the movable part (11), on the side opposite to that which slides on the fixed part (10), has a coupling region intended to be coupled in a detachable and interchangeable manner with the straightedge (S), with the cross-section of said coupling region complementary to that of the straightedge (S).

7. A tool according to claim 6, wherein said coupling region comprises a box-like structure with independent and elastically-deformable walls (113) that are free to expand outwardly due to the movement of a frustoconical wedge-shaped element (16), which penetrates within said box-like structure, wherein said walls (113) are provided with radial fins (114) complementary to the frustoconical element (16), so that the movement of said frustoconical element (16) determined by a screw (17) inserted from the outside through the inner wall (112) of the sliding seat (111) of the movable part (11) and engaging in a hole (19) within the frustoconical element (16), causes the outward expansion of the walls (113) of said box-like structure, which press against the walls of the straightedge (S), thus causing the locking of the straightedge (S) to said coupling region.

8. A tool according to claim 7, **characterized in that** said screw (17) extends into a through-hole (18) formed in the movable part (11) and whose head is housed within a relative seat formed in the wall (112) of the movable part (11), in order not to hinder the sliding of the movable part (11) on the guide (101) of the fixed part (10).

9. A tool according to claim 2, wherein the cross-section of said region (101) of the fixed part (10) intended to be coupled with the movable part (11) has a T-shaped cross-section, while the seat (111) of the movable part (11) with which the region (101) is coupled has an essentially U-shaped cross-section, with the ends facing inwards, with two sliding sections that engage within two corresponding lateral grooves (102) formed in the intermediate part of said T, so as to form a sliding guide for the movable part (11).

10. A tool according to claim 4, wherein the section of the movable part (11) projecting with respect to the fixed part (10) towards the working plane and with respect to the reference surface (M) that defines the leveling height (L), corresponds to the thickness of an article to be laid on the levelled application layer.

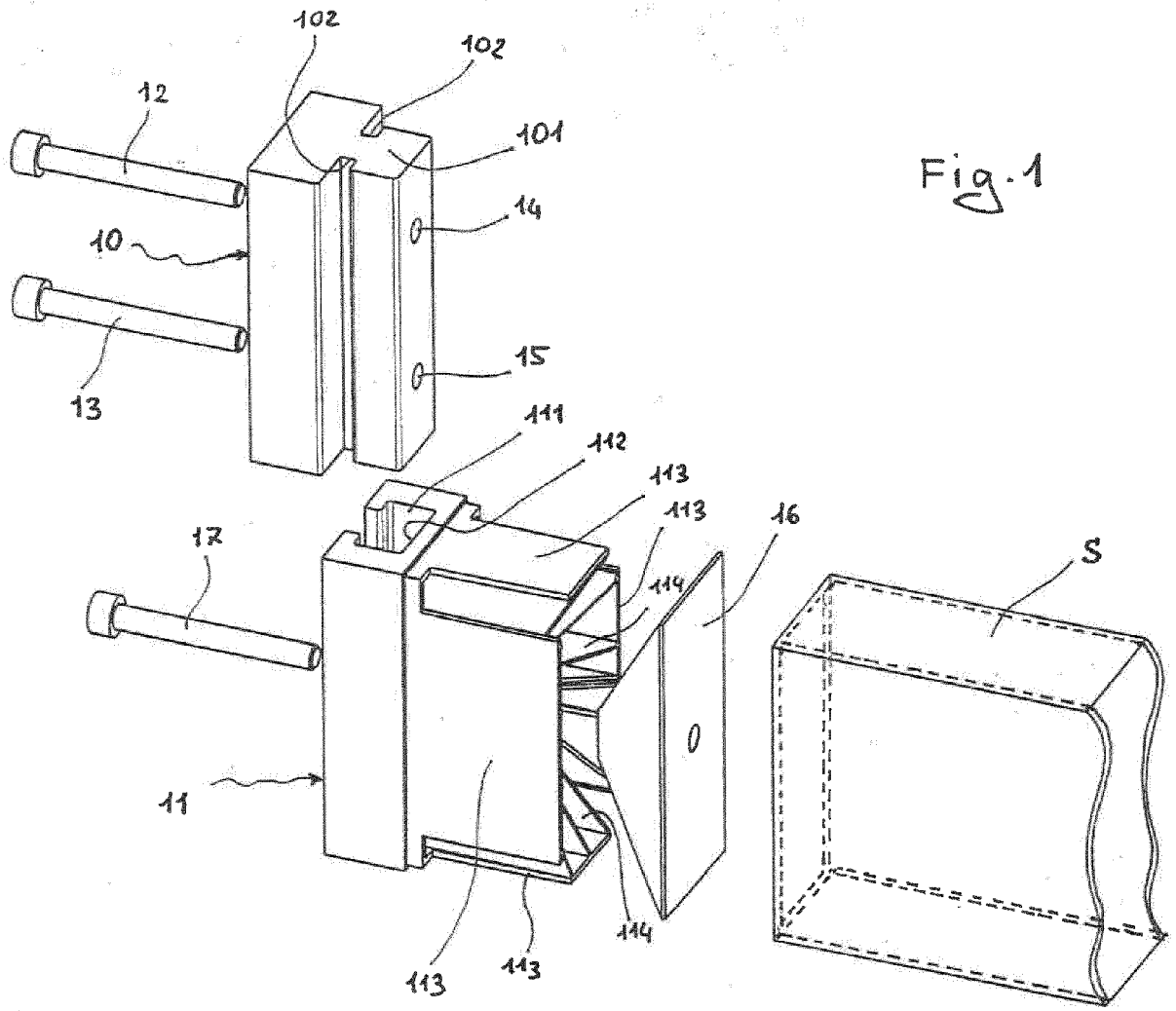
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Fig. 1

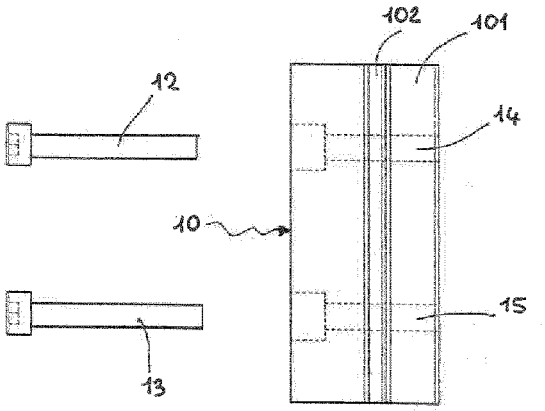
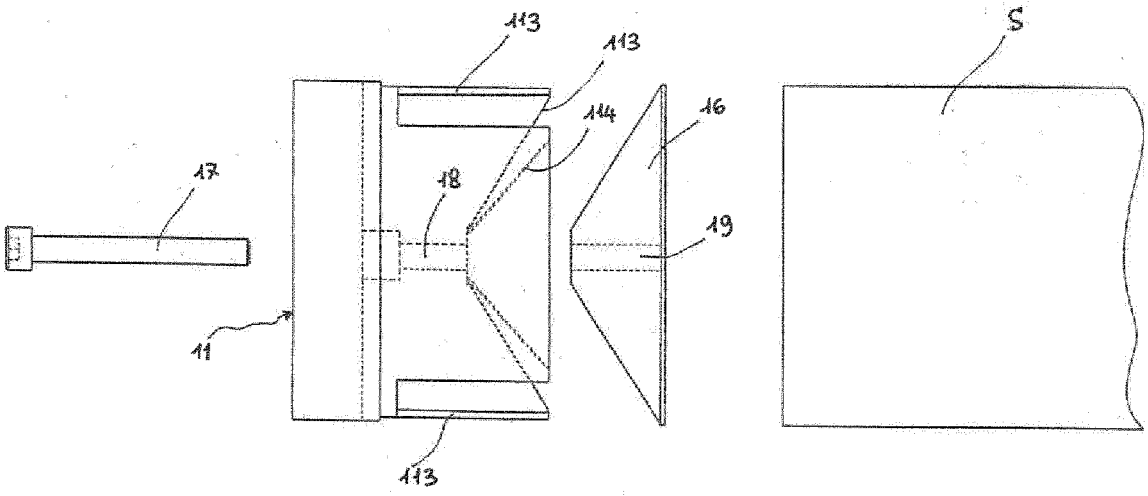


Fig. 2



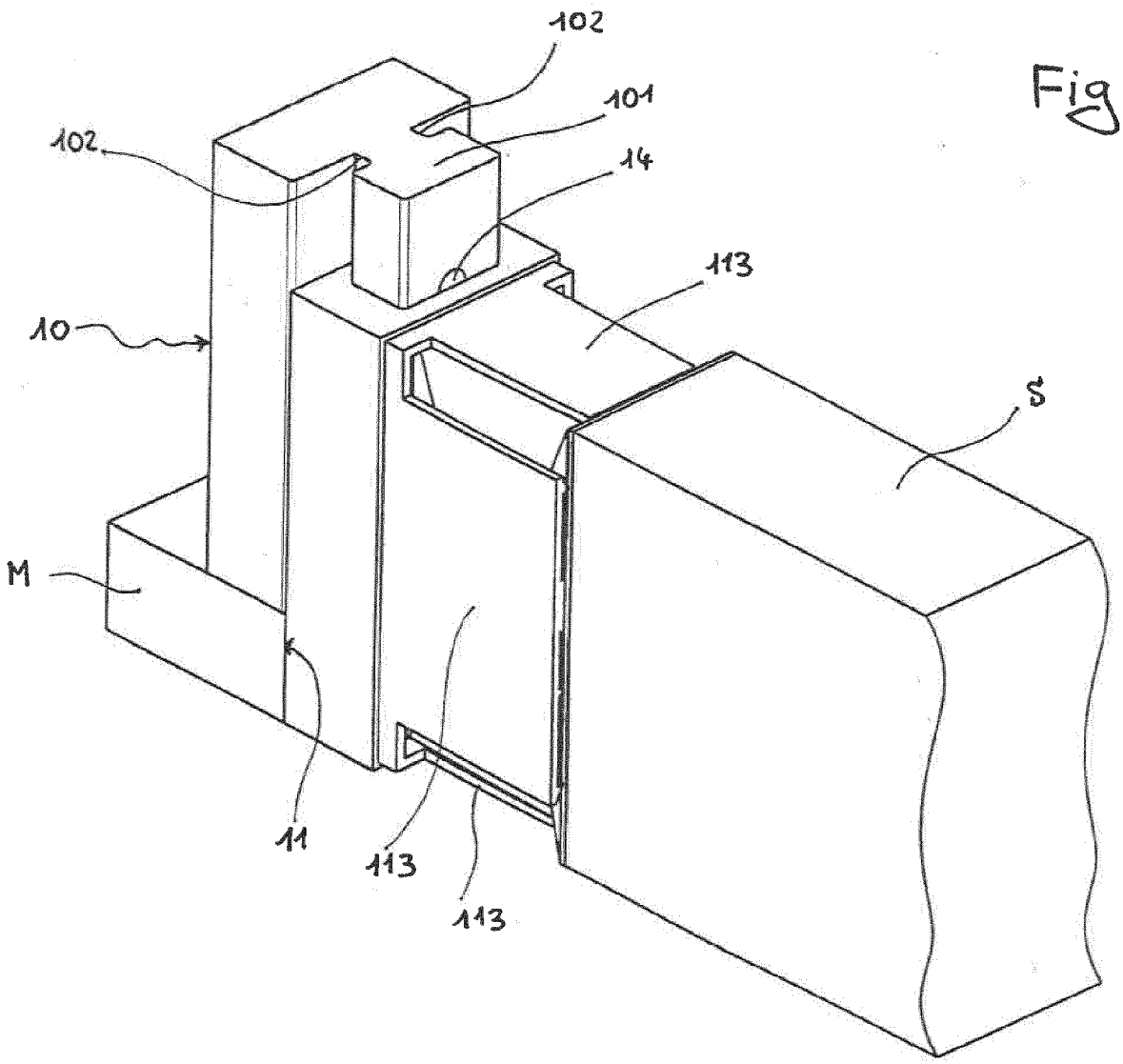


Fig. 3

Fig. 4

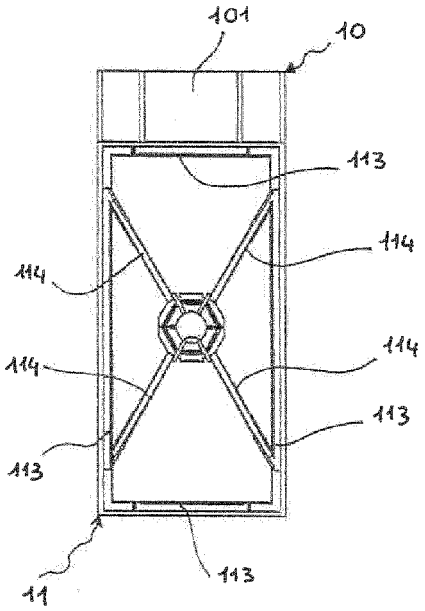

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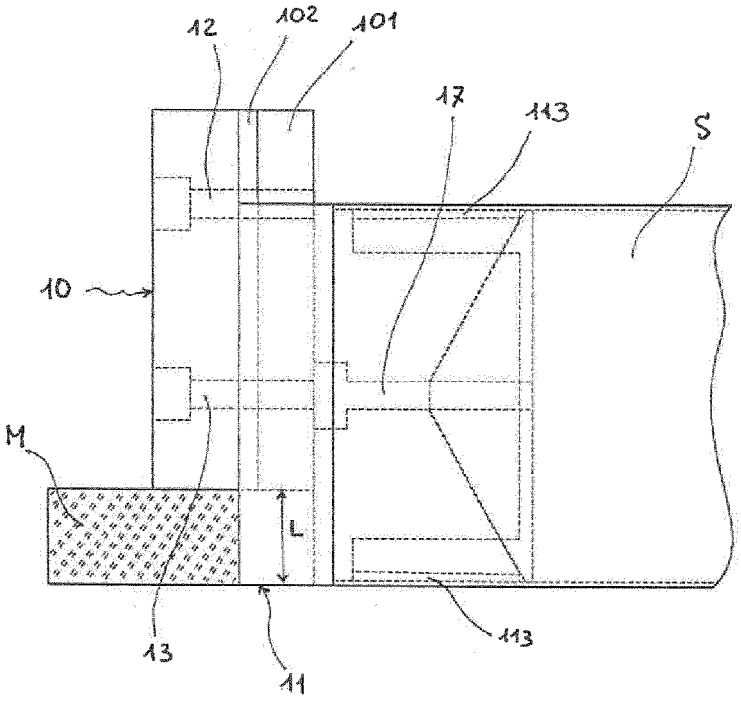
Fig. 5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EUROPEAN SEARCH REPORT

Application Number
EP 17 17 0894

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2010/202831 A1 (SARANGA JOHN [US]) 12 August 2010 (2010-08-12)	1-6,9,10	INV. E04G21/10
A	* paragraph [0023] - paragraph [0025]; figures 1-5 *	7,8	E01C19/15 E04F21/24

X	US 4 371 330 A (HEFFERNAN PETER C) 1 February 1983 (1983-02-01)	1-6,10	
A	* column 2, line 64 - column 4, line 2 *	7-9	

X	US 2006/192073 A1 (CASALE MICHAEL [US]) 31 August 2006 (2006-08-31)	1,3,4,10	
A	* paragraph [0024] - paragraph [0030]; figures 1-6 *	2,5,6	

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A	* column 2, line 38 - column 3, line 35; figures 1-5 *	7,8	

TECHNICAL FIELDS SEARCHED (IPC)

E04G
E01C
E04F
G01C
E04C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 September 2017	Manera, Marco

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