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### (54) Shower cabin with sliding door

(57) Shower cabin comprising a front wall (1) with a fixed part (11) having a top edge, and a door (12) displaced with respect to the fixed part so as to be movable in parallel fashion to itself and to the fixed part (11), between an opening position, in which it overlaps at least partially the fixed part (11), freeing a passage for permitting a user to enter the shower area, and a closed position

in which said passage is blocked, the cabin also comprising guide means for the sliding of the door (12) comprising lower guide means (4,6) arranged at the base of the door and top guide means (5,8) operating in the top area of the door, the top guide means (5,8) comprising sliding means (5) projecting from a face of said door (12) and slidably engaged in a slot (8) formed on the fixed part (11) parallel to the top edge.

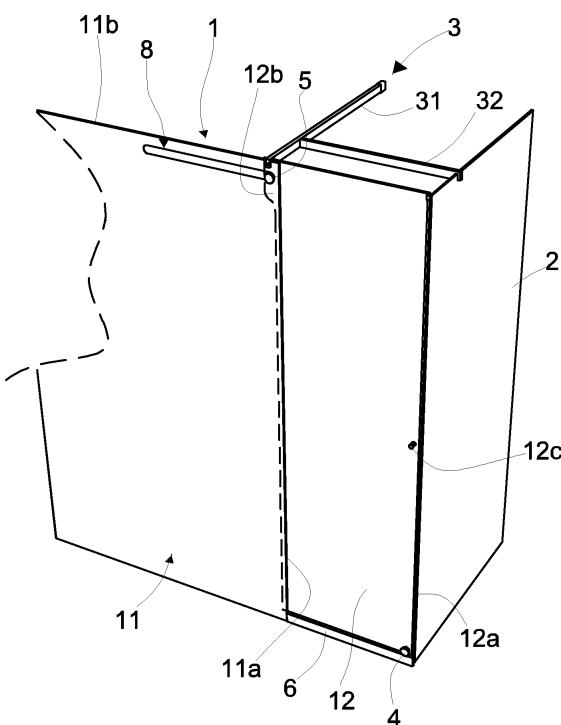


Fig.1

## Description

**[0001]** The present invention concerns the field of bathroom furnishing, and in particular its object is a new shower cabin structure, i.e. the partitions made from glass, metal and/or plastic materials that are used to separate the shower tray area from the rest of the bathroom, so as to act as a barrier against water spraying around.

**[0002]** Such partitions comprise walls made from glass, crystal, or even plastic materials provided that they have a certain degree of permeability to light, supported vertically by load-bearing frames (normally made from metal) that also connect the partitions to the building structures. There is at least one entry door that opens and closes through hinges or sliding systems. The sliding system is often preferred due to its practicality of use, the reduced amount of space it requires, and the elegance of the design resulting from its use.

**[0003]** However, the sliding solution, according to the prior art (see e.g. FR2754698), cannot work without the use of massive guide devices, which do however constitute an aesthetic and sometimes functional disturbance, making the assembly and the maintenance more difficult.

**[0004]** The object of the present invention is to provide a shower cabin with sliding door that is functionally and aesthetically advantageous with respect to known systems, in particular reducing the structural and aesthetic impact of metallic guide systems additional to the glass or crystal walls.

**[0005]** Such an object is achieved with the sliding door shower cabin according to the invention, the essential characteristics of which are defined by the first of the attached claims.

**[0006]** The characteristics and advantages of the shower cabin with sliding door according to the invention will become clearer from the following description of embodiments thereof, given as non-limiting examples, with reference to the attached drawings, in which:

- figure 1 is an overall axonometric view of a shower cabin according to the invention;
- figure 2 is a front view of the cabin of figure 1, without a lower guide element;
- figure 3 is a sectional view according to a horizontal intermediate plane of the cabin of figure 1;
- figure 4 is a sectional view, taken along lines IV-IV of figure 2, with representation limited to the lower and upper end areas of a door of the cabin, in correspondence with respective support wheels;
- figures 5 and 6 are axonometric representations of respective metallic assembly elements of the cabin, represented in an isolated manner; and
- figures 7 and 8 show axonometric and exploded views, respectively, of the upper and lower wheel support systems for the door of the cabin according to the invention.

**[0007]** With reference to the above figures, a shower cabin according to the invention comprises a front wall 1, divided into a fixed part 11 and a mobile part or door 12, only slightly displaced with respect to the fixed part

5 so as to be moveable in a rollaway fashion parallel to itself and to the same fixed part 11, overlapping with the latter on the side facing towards the shower tray (not represented). Through the passage left free by the door 12 in open configuration, i.e. when the door is translated to overlap with the fixed part 11, the user can indeed enter the shower tray.

**[0008]** A further fixed lateral wall 2 can also be provided perpendicular to the front wall, to make an angular configuration where needed. The lateral wall 2 can for example be omitted when the shower tray is arranged in a wall cavity only the free side of which must be blocked by the cabin. On the other hand, a second lateral wall can also be present, parallel with the first lateral wall 2 on the opposite edge of the front wall 1. In accordance with the prior art, the fixed part 11 and the door 12 of the front wall 1, as well as the at least one lateral wall 2, normally consist of flat panels made from tempered glass with various types of surface finish.

**[0009]** The fixed part 11 and lateral wall 2 can be advantageously made mutually integral and stabilised by a top frame 3, comprising at least one first beam 31 perpendicular with the fixed part 11, secured to the latter in proximity to the door 12 at one end, and anchored at the other end to the masonry wall that borders the shower tray along the side which is parallel and opposite to the side blocked by the front wall 1. A second beam 32 transversally, i.e. parallel with the front wall 1, joins the first beam 31 to the side wall 2. Other strengthening and/or water insulation means can be arranged along the edges 30 of the panels intended to make contact with the masonry, based on the techniques usually applied in the field.

**[0010]** According to the invention, the sliding support of the door 12 with respect to the fixed portion 11 is provided by two wheel devices 4 and 5, respectively arranged at the base, near to a free vertical edge 12a of the door 12 (i.e. the edge farthest from the fixed part 11), and on top in the diagonally opposite corner of the door itself. The two lower and upper devices 4 and 5, shown in greater detail in figures 4, 8 and 9, are *per se* substantially identical with each other, comprising respective wheels 41, 51 with a circumferential race 41a, 51a, supported cantilever on the outer face of the door, and adapted to rotate via bearings 42, 52 on shafts 43, 53. The outer end of each shaft is threaded and, projecting beyond the wheels 41, 51, engages with a respective outer axial locking disk 44, 54 having a greater diameter than the wheels themselves.

**[0011]** A fixed plate 45, 55 integral with the door 12 and perforated to allow the shaft 43, 53 to pass rests on the inner face of each wheel 41, 51. The assembly is completed, in each device, by a washer 46, 56, locked in a hole formed in the door, and by an inner axial locking disk 47, 57, which abuts on the inner face of the same

door. Both the washer and the inner disk are in turn centrally perforated to ensure the passage of the shaft 43 or 53.

**[0012]** The fixed plate 45 of the lower device 4, this being the only difference between the two devices, has a radial protrusion 48, with an end 48a bent outwards in an L shape. Such an end 48a slidably engages (figure 4) with a horizontal guide slit 6a formed internally in a socket 6 at the base of the door. The socket 6 consists of a metallic profile (or else made from synthetic material such as the acrylic material known under the trade name Corian®), with a top end shaped so as to couple with the race 41a of the wheel 41, which therefore rotates resting on the profile.

**[0013]** The outer locking disk 44 protects the wheel and at the same time, being arranged outside of the socket 6, with its increased diameter acts as a safety against undue displacements in a direction transversal to the sliding direction. In this regard, a further safety against release due to a lifting force, is provided by the radial protrusion 48. Again considering the transversal direction (possible force urging an inward displacement), in the vicinity of the free vertical edge 11a of the fixed part 11, a shaped plate 7 (figure 2, figure 3 and, in greater detail, figure 6) is fixed to the ground to act as a stop and guide member. More specifically, the plate 7 comprises a base 7a adapted to be anchored through holes 7b, and a tab 7c that rises from the base 7a with a vertical segment, followed by a horizontal segment, and finally by an end segment that is once again vertical. The seating defined on the inside by the first two segments, indicated at 7d, engages with the socket 6, whereas the end segment, indicated at 7e, indeed acts as an abutment against the transversal displacement of the door 12 towards the inside.

**[0014]** On the other hand, as far as the top device 5 is concerned, the wheel 51 is housed and engages within a slot 8 formed with horizontal extension in the fixed part 11, along the top edge thereof, indicated at 11b, starting from the free vertical edge 11a. The lower side 8a of the slot 8 is shaped so as to engage with the race 51a of the wheel 51 and, also in this case, the outer axial locking disk 54 blocks possible undue translations of the door 12 towards the inside.

**[0015]** The operation of the shower cabin according to the invention can clearly be understood from the above description; the door 12 will go from the closed position (figure 1 and figure 3) to the opening position (not represented) translating until it overlaps inside the mobile part 11, resting in a sliding manner with the lower wheel device 4 on the socket 6 and with the top wheel device 5 on the lower edge of the slot 8. A small knob 12c can be provided for assisting the manual actuation.

**[0016]** The end stop in the closed position (figure 1 and, in greater detail, figure 5) is preferably made more secure, as well as by a conventional silicon gasket, by a stop block 9 engaged at the top end of the free vertical edge of the door 12a so as to slightly project from it. Still

referring to the closed position, the overlapping between the door 12 and the fixed part 11 (figure 1) is made minimal, with a consequently optimal aesthetic result, if, advantageously, the upper wheel device 5 is arranged on an outlined projection 12b of the edge of the door, so as to leave the rest of the same edge substantially aligned with the free vertical edge 11a of the fixed part 11.

**[0017]** The shower cabin according to the invention offers therefore the advantage of doing away with upper guide elements added to the glass structure of the door and thus with a clear advantage, in terms of appearance, but also of a functional nature for simpler assembly operations, saving of material, linearity and precision of actuation and less difficult maintenance. Thanks to the arrangement here devised, that in particular does not require the use of big sized additional metal profiles to be applied to the glass, the distance or transversal displacement between the fixed and movable glass elements is minimal and does not call for adjustments via seal means or the like. Moreover, there is no need for manufacturing operations which result difficult, troublesome and/or involving a significant waste of material (and consequent weakening of the structure).

**[0018]** As mentioned, the material of the door 12 and of the fixed part 11 (as well as of the possible lateral wall 2) can in general be any type of transparent material, but preferably it will be glass or crystal of suitable mechanical properties. For the base socket 6 and the other similar mechanical components, metallic materials will be used, preferably stainless steel, or else synthetic materials such as the aforementioned Corian®, and nylon for the contact parts.

**[0019]** The cabin according to the invention can be made to size, according to the installation needs, and in the various types that have been mentioned above: angled, straight and alongside masonry parts or other glass-paned elements.

**[0020]** The present invention has been described with reference to preferred embodiments. It should be understood that there can be other embodiments falling within the same inventive concept, as defined by the scope of protection of the attached claims.

#### 45 **Claims**

1. A shower cabin adapted to enclose a shower area, the cabin comprising a front wall (1) with a fixed part (11) having a top edge (11b) and a door (12) movable in parallel fashion to itself and to said fixed part (11) between an opening position, in which it overlaps at least partially said fixed part (11), freeing a passage for permitting a user to enter said shower area, and a closed position in which said passage is blocked, the cabin further comprising guide means for the sliding of said door (12) comprising lower guide means (4, 6) arranged at the base of said door and top guide means (5, 8) in the top area of said door, **charac-**

**terized in that** said top guide means (5, 8) comprise sliding means (5) projecting from a face of said door (12) and slidably engaged with a slot (8) formed in said fixed part (11) parallel to said top edge (11b).

2. The cabin according to claim 1, wherein said sliding means (5) comprise top wheel means (51) rotatably supported cantilever by said face of said door (12) and movable in contact with a lower side (8a) of said slot (8).

3. The cabin according to claim 2, wherein said top wheel means (51) project in correspondence with an outlined projection (12b) formed coplanarly with the door (12) on a vertical edge of the same door adjacent to said fixed part (11).

4. The cabin according to claim 2 or 3, wherein said lower guide means (4) comprise in turn wheel means (41) rotatably supported cantilever by said face of said door (12) and movable in contact with a socket (6) at the base of said door.

5. The cabin according to claim 4, wherein said lower guide means (4) further comprise at least one protrusion (48a) projecting from said face of said door and slidably engaged in a slit (6a) of said socket (6) for hindering the upwards displacement of said door (12).

6. The cabin according to claim 4 or 5, wherein said wheel means (4, 5) comprise respective circumferential races (41a, 51a) shaped so as to match respectively with shaped peripheries of said lower side (8a) of said slot (8) and of the top edge of said socket (6).

7. The cabin according to any of the claims from 4 to 6, wherein said guide means (4, 5) comprise respective locking disks (44, 54) integral with said door (12) and external to said wheel means (41, 51), said disks having an increased width with respect to said wheels so as to be adapted to abut transversally to the sliding direction respectively with said socket (6) and with said fixed part (11).

8. The cabin according to any of the claims from 4 to 7, wherein said wheel means (41, 51) project from a face of said door (12), external to the shower area, in proximity to diagonally opposed angles of said door.

9. The cabin according to any of the claims from 4 to 8, wherein said lower guide means further comprise safety means (7) hindering the displacement in a transversal direction to the sliding direction, comprising a fixed shaped plate (7c) rising so as to define a seating (7d), housing said socket (6), and an end segment (7e) for abutment against the transversal displacement of the door (12) away from said fixed part (11).

5 10. The cabin according to any of the previous claims, comprising a stop block (9) engaged with a top end of the vertical free edge (12a) of said door (12) so as to project therefrom.

10 11. The cabin according to any of the previous claims, comprising top frame means (3) with at least a first beam (31) extending from said fixed part (11), orthogonally thereto and fixed to it in proximity to said door (12), to a wall which delimits the shower area on the opposite and parallel side to the side of said front wall (1).

15 12. The cabin according to claim 11, comprising at least one further fixed lateral wall (2), extending orthogonal to said front wall (1), said top frame means (3) further comprising a second beam (32), parallel with said front wall (1), which joins said first beam (31) to the lateral wall (2).

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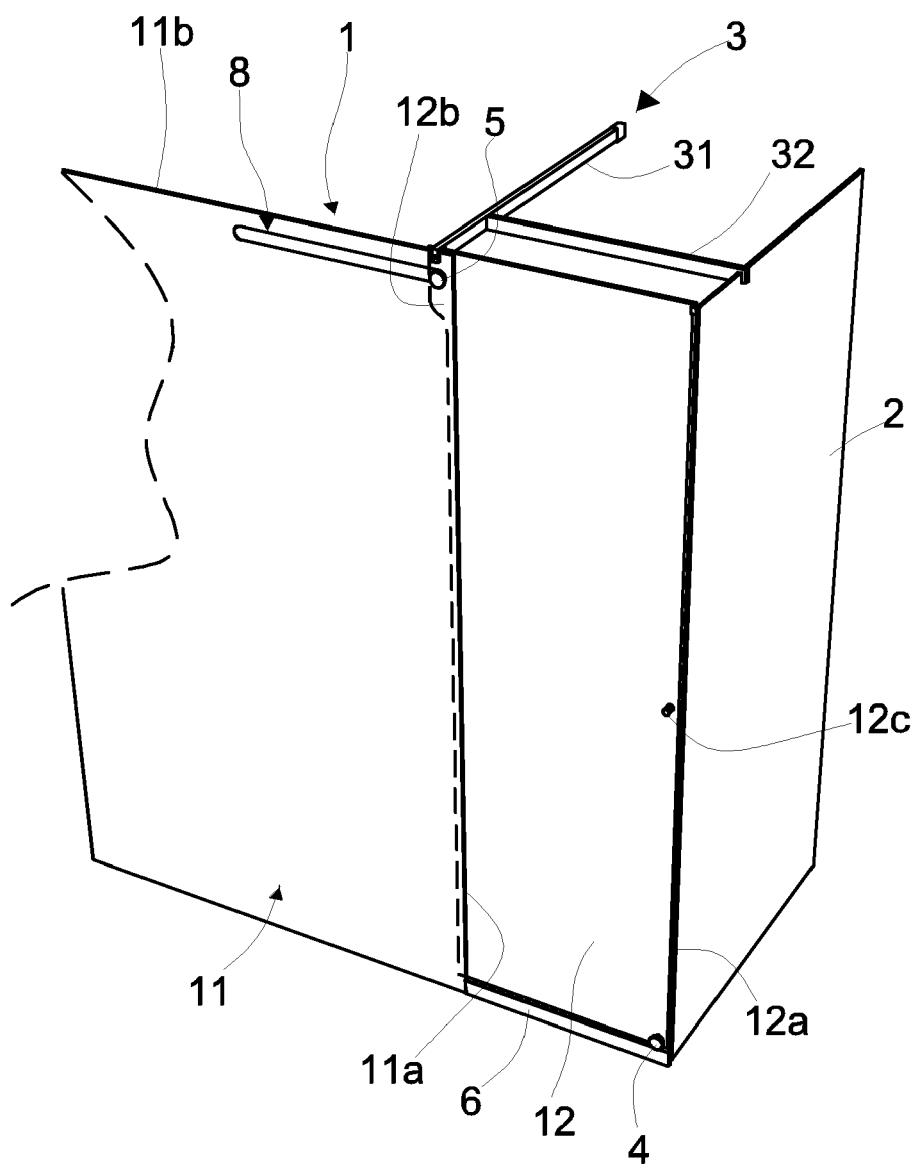


Fig.1

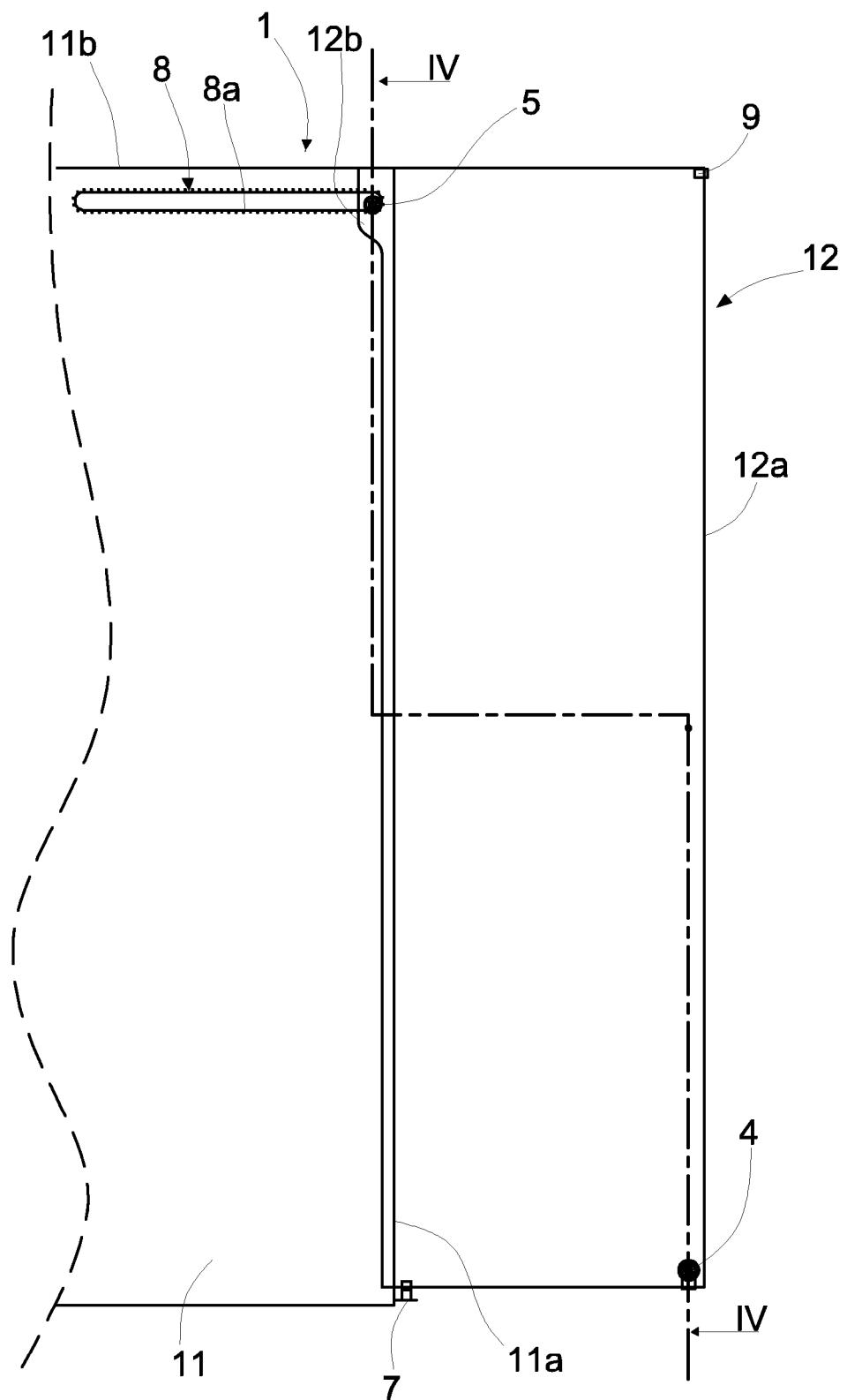


Fig.2

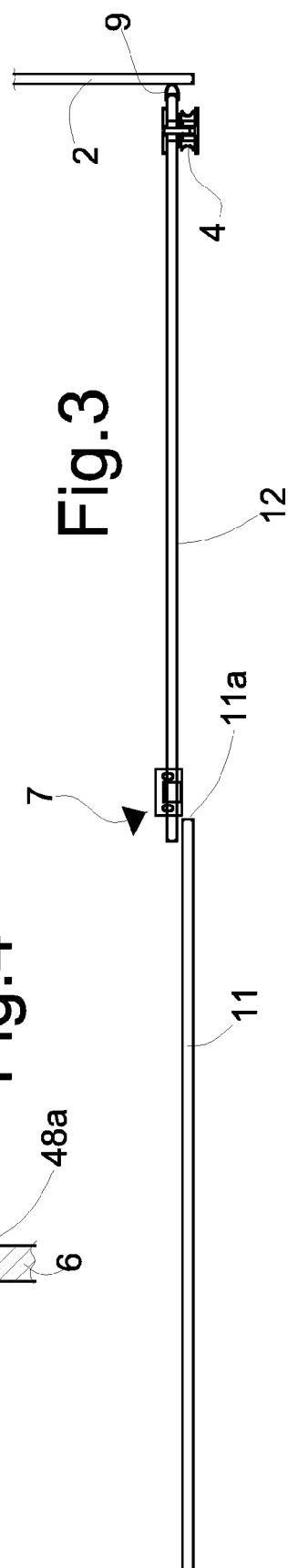


Fig.3

Fig.4

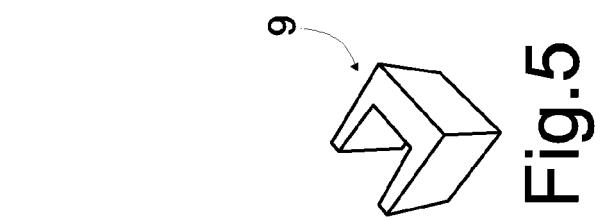
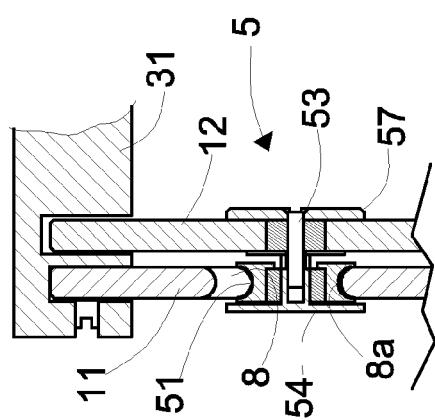


Fig.6



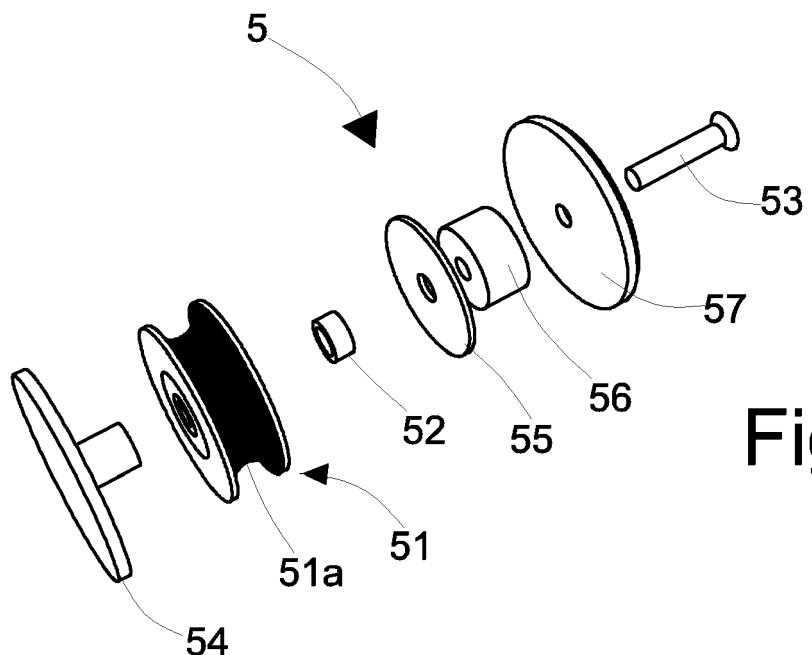


Fig.7

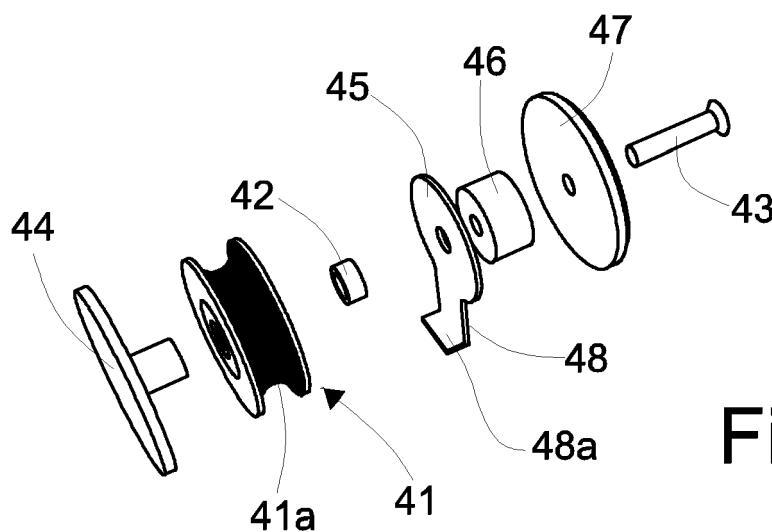


Fig.8



## EUROPEAN SEARCH REPORT

Application Number

EP 10 17 7837

DOCUMENTS CONSIDERED TO BE RELEVANT			CLASSIFICATION OF THE APPLICATION (IPC)						
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim							
X	FR 2 754 698 A1 (DORMA GMBH & CO KG [DE]) 24 April 1998 (1998-04-24)	1,2,4-6, 8	INV. A47K3/34 E05D15/06						
A	* page 3, line 10 - page 8, line 31 * * page 9, line 34 - page 13, line 9; figures 1-6 *	9							
X	DE 202 15 762 U1 (KL BESCHLAEGE KARL LOGGEN GMBH [DE]) 16 January 2003 (2003-01-16) * the whole document *	1,2,6,7, 10							
			TECHNICAL FIELDS SEARCHED (IPC)						
			A47K E05D						
<p>The present search report has been drawn up for all claims</p> <p>1</p>									
<table border="1"> <tr> <td>Place of search</td> <td>Date of completion of the search</td> <td>Examiner</td> </tr> <tr> <td>Munich</td> <td>11 January 2011</td> <td>Fajarnés Jessen, A</td> </tr> </table>				Place of search	Date of completion of the search	Examiner	Munich	11 January 2011	Fajarnés Jessen, A
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<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p>		<p>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 ..... &amp; : member of the same patent family, corresponding document</p>							

ANNEX TO THE EUROPEAN SEARCH REPORT  
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EP 10 17 7837

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11-01-2011

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
FR 2754698	A1	24-04-1998	DE	29618205	U1	13-02-1997
DE 20215762	U1	16-01-2003	NONE			

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

- FR 2754698 [0003]