



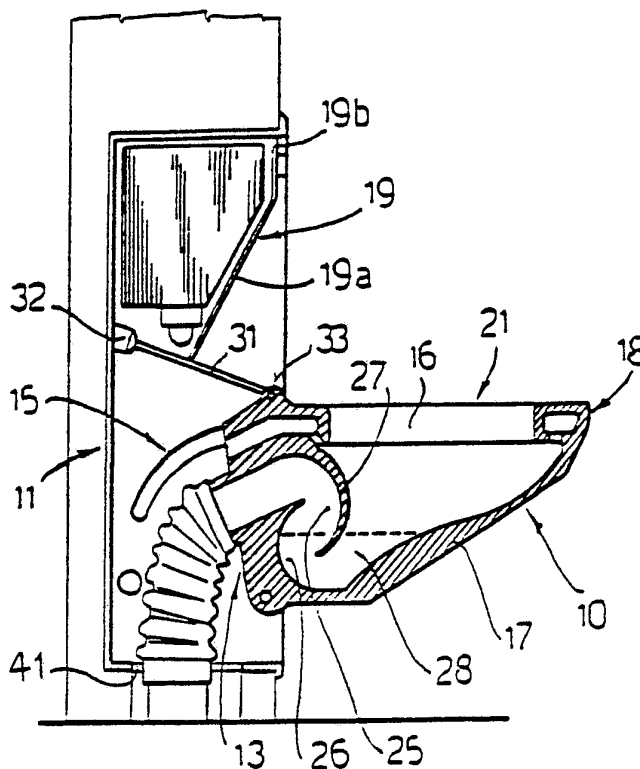
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification<sup>4</sup> : E03D 11/12</p>	<p>A1</p>	<p>(11) International Publication Number: WO 88/ 00993 (43) International Publication Date: 11 February 1988 (11.02.88)</p>
<p>(21) International Application Number: PCT/EP87/00406 (22) International Filing Date: 28 July 1987 (28.07.87) (31) Priority Application Number: 22674 B/86 (32) Priority Date: 29 July 1986 (29.07.86) (33) Priority Country: IT</p> <p>(71) Applicant (for all designated States except US): A.T. AVANZATA TECNOLOGIA S.R.L. [IT/IT]; Via della Vittoria, 64, I-06065 Passignano Sul Trasimeno (IT).</p> <p>(72) Inventor; and (75) Inventor/Applicant (for US only) : GAGLIANO, Vitaliano [IT/IT]; Via della Rinascita, 17, I-06065 Passignano Sul Trasimeno (IT).</p> <p>(74) Agent: DR. ING. A. RACHELI &amp; C.; Viale San Michele del Carso, 4, I-20144 Milan (IT).</p>		<p>(81) Designated States: AT, AT (European patent), AU, BB, BE (European patent), BG, BJ (OAPI patent), BR, CF (OAPI patent), CG (OAPI patent), CH, CH (European patent), CM (OAPI patent), DE, DE (European patent), DK, FI, FR (European patent), GA (OAPI patent), GB, GB (European patent), HU, IT (European patent), JP, KP, KR, LK, LU, LU (European patent), MC, MG, ML (OAPI patent), MR (OAPI patent), MW, NL, NL (European patent), NO, RO, SD, SE, SE (European patent), SN (OAPI patent), SU, TD (OAPI patent), TG (OAPI patent), US.</p> <p><b>Published</b> With international search report.</p>

(54) Title: ROTATING HIDEAWAY SANITARY FIXTURE

(57) Abstract

A sanitary rotating fixture (10, 10a), which conceals in a wall niche (11). The fixture is more or less triangular in shape when viewed from the side. It has a rear wall (13, 13a), an upper base (21, 21a), side walls (16, 16a), a sloping bottom (17, 17a) and a means of rotation (12, 23) permitting rotation for less than 90°, in particular of about 60° around a horizontal axis. Holding means, for example in the form of stops are provided for projecting caps (14) that slide in arch-shaped grooves (15) in the side walls of the niche (11).



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"ROTATING HIDEAWAY SANITARY FIXTURE"

The present invention concerns the sanitary ware normally installed in bathrooms and lavatories in general.

There are various known types of sanitary fixtures that take up a certain space in bathrooms. In some cases, for example in caravans and  
5. hotels, it is particularly important that the space set aside for the bathroom be reduced to a minimum and this is difficult to achieve using conventional sanitary ware.

The purpose of the present invention is to create practical, functional sanitary fixtures that take up minimum space.

The purpose is achieved by creating rotating, hideaway sanitary fixtures.

The sanitary fixtures have more or less the shape of a right-angled triangle when viewed from the side, namely they have a more or less horizontal upper base from which originate a more or less vertical rear wall, right-angled triangle shaped side walls and a sloping bottom that joins the hypotenuses of the two right-angled triangles, a means for rotation of the sanitary fixture being provide in the lower rear part of the sanitary fixture so that it can be rotated around a horizontal axis through an arc of less than 90°, preferably about 60°.

The side walls preferably have a holding means to lock the sanitary fixture in the pulled out position. These means may consist of projecting caps fitted into a composite shaft inserted at the top of the rear wall. In this way the fixtures can be moved in and out of a niche in the bathroom wall. In order to do this the holding means in the form of projecting caps are made to enter special grooves provided in the side walls of the niche.

The projecting caps can enter the seat in which the composite shaft is accommodated by means of springs during assembly of the fixture; said springs, when they are pressed, cause the composite shaft to be shortened, thus pulling in the projecting caps, the fixture is supported on the lower pivots, the springs are compressed then the fixture is pushed part of the way into the niche until the composite shaft is level with the grooves on the sides of the niche, after which the springs are released, making the composite shaft expand and return to its original length and the caps project and enter the respective grooves.

The depth of the niche must be such as to accommodate the sanitary

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fixture, at least partially. The width and height of the niche are such as to allow the fixture to be inserted in the niche itself, inside which are all the connections and ducts to supply water for use and to discharge waste water.

5. The niche is preferable set higher than floor level to allow tiles to be laid below said niche, ensuring greater hygiene for the whole.

The means of rotating the fixture consists of projecting parts in the form of pivots protruding from the side of the niche and pointing towards each other on which are inserted the corresponding cavities provided at the bottom of the side walls, which face forwards and end in a part that can accommodate and rotate around said coaxial pivots. A washer can also be provided between the projecting parts and the cavity.

- 10.
15. The means of holding the sanitary fixture are projecting caps that slide in a circular groove in the side walls of the niche, each groove having two ends, a top one to hold the respective cap when the fixture is pulled out and a bottom one to stop the cap when the fixture is inserted in the niche. The caps are fitted into a composite shaft that crosses the top of the more or less vertical rear wall.

20. In this way, when use is to be made of the fixture it is pulled out of the niche by means of a hollow in the front edge of the fixture; the fixture rotates around the projections in the niche and the projecting caps slide along the grooves until they reach the ends of the grooves where the fixture rests when its base is horizontal.

25. Since the ducts must follow the movements of the fixture, they have considerable freedom of movement, being in particular of the bellows

type.

- The sanitary fixture has a drain-trap that is envisaged in different positions according to the type of fixture, namely in the bidet it is envisaged at the end of the bellows-type waste pipe before the inlet to
5. the pipe made fast to the floor, while in the water closet it is envisaged in the bowl of the fixture itself. The front part of the drain-trap is cup-shaped and inside this cup there extends a curved septum so that a certain amount of water is retained, enough to form a water plug, when the water closet is horizontal and when it is
  10. vertical.

The drain device can also consist of a fixed trap in the floor or a special valve, or forced draining can be provided, with a single pump or with two separate pumps (one to supply the water and one to expell the waste water).

15. To hide the ducts and all the devices connected to the sanitary fixture there are a front wall with suitable sloping parts and a plastic sheet attached at one end to a support inside the niche and at the other end to the rear edge of the sanitary fixture. When the fixture is pulled out the sheet is stretched tight and also adheres to the lower edge of
20. the front wall; when the fixture is inserted into the niche the sheet folds along the back wall of the niche.

- The sanitary fixture is preferably contained in a box-shaped element, the front wall of which is a panel in a single piece, the whole suitable for mounting flush to the wall, the bottom wall and possibly
25. the rear wall being equipped with holes or slots.

The present invention according to a preferred but non-limiting

embodiment, is illustrated in the attached drawings, in which:

- Fig. 1 shows a section along the axis of symmetry of a first sanitary fixture pulled out of the niche that accommodates it;
- Fig. 2 shows a section along the axis of symmetry of a first sanitary fixture inserted inside the niche;
5. Fig. 3 shows a section along the axis of symmetry of a second sanitary fixture pulled out of the niche;
- Fig. 4 shows a section along the axis of symmetry of the same second sanitary fixture inside the niche;
10. Fig. 5 shows a front view of the first sanitary fixture inside the niche;
- Fig. 6 shows a front view of the first sanitary fixture pulled out of the niche;
- Fig. 7 shows a perspective view of a detail of the sanitary fixture;
15. Fig. 8 shows a sectional view of a composite shaft fitted into a sanitary fixture.

- Figure 1 shows a water closet sanitary fixture 10 pulled out of the niche 11 that accommodates it. The niche 11 is situated at a distance H from floor level and is equipped with a hole 41 in the bottom wall. The
20. sanitary fixture has a triangular body, if viewed from the side, and an upper base 21 from which originate a more or less vertical rear wall 13, side walls 16 in the form of right-angled triangles and a sloping bottom 17. All the walls, apart from the rear one, meet along the front edge 18. The sanitary fixture moreover has hollows 23 (Fig. 7) situated
25. at the bottom of the side walls 16 at their lowest point; each hollow accommodates a lateral projection 12 of the niche around which the sanitary fixture 10 can rotate to be pulled in or out of the niche 11.

The triangular side walls 16 are equipped with projecting caps 14 that

- slide in special arc-shaped grooves 5 provided in the side walls of the niche. Each groove 15 has ends to hold the respective projecting cap 14, i.e. the top end retains the projecting cap when the sanitary fixture is pulled out and its upper base is in a horizontal position and the bottom end stops the projecting cap when the fixture is pushed completely inside the niche 11.

As can be seen in figures 1 and 2, the niche also contains all the connections and ducts to supply water for use and to discharge waste water.

10. On the bottom of the fixture there is a drain-trap 25 consisting of a cup 26 inside which extends a curved septum 27. The water plug 28 that comes to be formed at the bottom of the fixture in the horizontal position is also maintained when the fixture is inserted inside the niche in the vertical position (Figure 2).
15. The front wall 19 of the niche, made up of sections 19a and 19b, screens the plumbing and the other devices (for example the flush tank) provided inside the niche. To complete the screen there is a plastic sheet 31 that is fixed at one end to a support 32 on the inside of the niche 11 and at the other end to the rear edge 33 of the sanitary fixture. When the sanitary fixture is pulled out, the sheet 31 is stretched tight and adheres to the lower edge of the sloping section 19a of the front wall 19; when the fixture is pushed back the sheet 31 folds along the rear wall of the niche 11.

- In Figure 2 the sanitary fixture is shown inserted inside the niche, from which only the bottom 17 protrudes.

Figures 3 and 4 show a sectional view of a second type of sanitary



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fixture, namely a bidet 10a. It also is made up of a bottom 17a, a rear wall 13 and side walls 16a that meet in a front edge 18a. It has cavities 23 at the bottom of the side walls 16a and projecting caps 14 that slide in the grooves 15.

5. The front wall of the niche is formed by the single sloping section 19c that holds the mixer tap or taps.

The fixture has an overflow outlet 35.

10. Figures 6 and 5 respectively refer to a front view of a water closet in the horizontal position, i.e. pulled out of the niche, and in the upright position, i.e. inserted inside the niche. It can be noted that underneath the front edge 18 a hollow 20 is provided, forming a grip to bring about rotation of the fixture.

15. Figure 7 shows the detail of the rear wall 13 of the fixture into which the composite shaft equipped with projecting caps 14 is inserted into bushes 2. The through shaft 1 connects the tubular sections 3; it is fixed by a vertical stop 9 that enters a centre hole 9a in the through shaft itself. The vertical stop 9 is held by washers 8 pushed by springs 7 that rest against nuts 6 screwed onto tubular sections 3. Between the edge of the bushes 2 and the nuts 6 are inserted plates 4 and washers 5, the plates 4 having projecting grips 4a. The projecting caps 14 are applied to the projecting ends of the tubular sections 3. The bushes 2 and the caps 14 are preferably made of teflon, while the other parts are in stainless steel.

25. During assembly, by pressing the springs 7 by means of the projecting grips 4a, the composite shaft is shortened and thus the caps 14 enter the seat in which the composite shaft is accommodated. The fixture,

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supported on the lower pivots, is inserted into the niche 11 until the composite shaft is level with the grooves 15 then the springs 7 are released and expand, restoring the composite shaft to its original length and the caps both project into the grooves 15.

5. At the base of the rear wall and along the side walls are situated the cavities 23 to accommodate the corresponding lateral projections 12 provided in the niche, after inserting the washers 22 that are preferably made of teflon.
  
10. Figure 8 shows the assembled composite shaft. The caps 14 are applied to the projecting ends of the tubular sections 3.

CLAIMS

1. A sanitary fixture (10, 10a), characterized in that it rotates, so that it can be concealed in a niche (11) set in the wall on which the fixture is fitted and that it is more or less triangular in shape when viewed from the side, with a rear wall (13, 13a), an upper base  
5. (21, 21a), side walls (16, 16a) and a sloping bottom (17, 17a), a means of rotation (12, 23) being provided underneath permitting rotation around a horizontal axis of said fixture through an angle of less than 90°, in particular an angle of about 60°.
2. A sanitary fixture according to claim 1, characterized in that  
10. it envisages holding means, for example in the form of stops for sideways projecting caps (14) that slide in arc-shaped grooves (15) in the side walls of the niche (11) that accommodates the fixture, the stops being the ends of the grooves (15).
3. A sanitary fixture according to claim 1 or 2, characterized in  
15. that the means of rotation consists of lateral projections (12) that protrude from the sides of the niche (11), on which are inserted corresponding cavities (23) provided at the bottom of the side walls

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(16, 16a), a washer (22) being placed between each projection (12) and each cavity (23).

4. A sanitary fixture according to claim 2 or 3, characterized in that the projecting caps (14) are fitted on a composite shaft  
5. consisting of a central through shaft (1) on which are inserted tubular sections (3), that project from the sides of the fixture, the through shaft (1) being fixed with a stop (9) inserted in a centre hole (9a) on the through shaft itself and with washers (8) pressed sideways by springs (7) that rest against nuts (6) screwed onto the tubular  
10. sections (3), the tubular sections (3) being inserted into bushes (2) and there being comprised between the edges of the bushes (2) and the nuts (6), washers (5) and plates (4) with projecting grips (4a) with which the springs (7a) are compressed during assembly of the fixture so that the caps momentarily enter the seat of the composite shaft.

15. 5. A sanitary fixture according to any one of the preceding claims, characterized in that in the niche (11) there is a front wall (19) made up of one or more strips (19a and 19b or 19c).

6. A sanitary fixture according to any of claims 1 to 5, characterized in that is contained in a box-shaped element, the front wall  
20. (19) of which is a panel in a single piece, the whole suitable for mounting flush to the wall, the lower wall and if necessary the rear wall being equipped with holes or slots.

7. A sanitary fixture according to any one of the preceding claims, characterized in that the front wall is equipped with a plastic  
25. sheet (31) fixed at one end to a support (32) inside the niche (11) and at the other end to the rear edge (33) of the sanitary fixture, the sheet being stretched tight when the fixture is pulled out and folding

along the rear wall of the niche when the fixture is inserted in the niche.

8. A sanitary fixture according to any one of the preceding claims, characterized in that it has a drain-trap (25), comprising a cup (26) inside which extends a curved septum (27), thus forming a water plug (28) that is maintained even when the water closet is raised and inserted inside the niche.
9. A sanitary fixture according to any one of claims 1 to 7, characterized in that the drain consists of a fixed trap in the floor.
10. 10. A sanitary fixture according to any one of claims 1 to 7, characterized in that it has forced drainage and a single pump is envisaged.
11. A sanitary fixture according to any one of claims 1 to 7, characterized in that it has forced drainage and two pumps are envisaged, one to supply water and one to discharge it.
12. A sanitary fixture according to any one of the preceding claims, characterized in that underneath the front edge (18, 18a) a hollow (20) is provided forming a gripping means for rotation of the fixture.
20. 13. A fixture according to any one of the preceding claims, characterized in that the ducts for supply of water for use and for discharge have considerable freedom of movement and in particular they are of the bellows type.

FIG. 1

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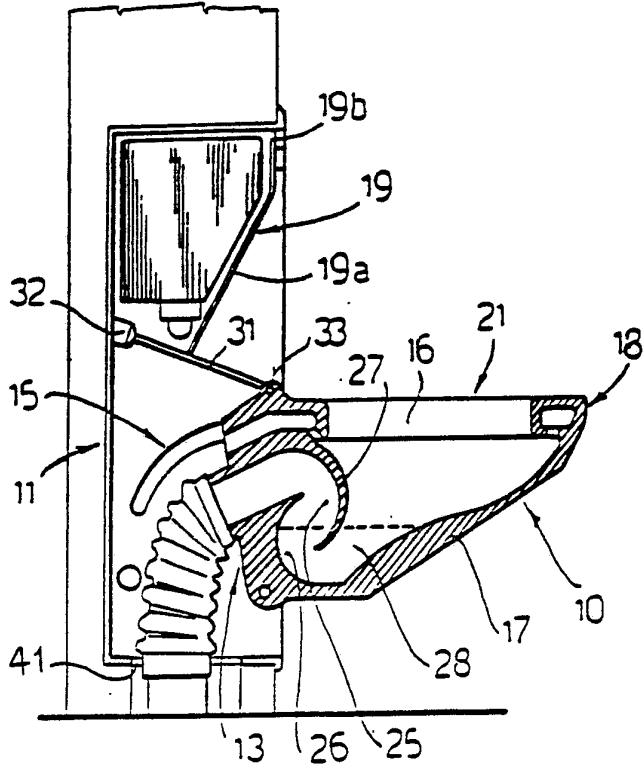


FIG. 2

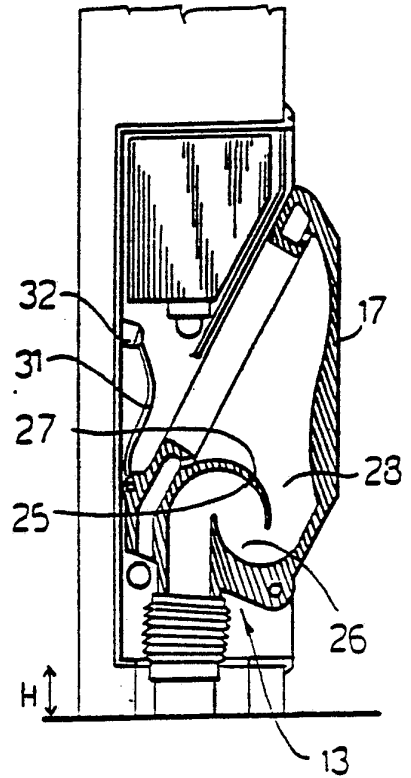


FIG. 3

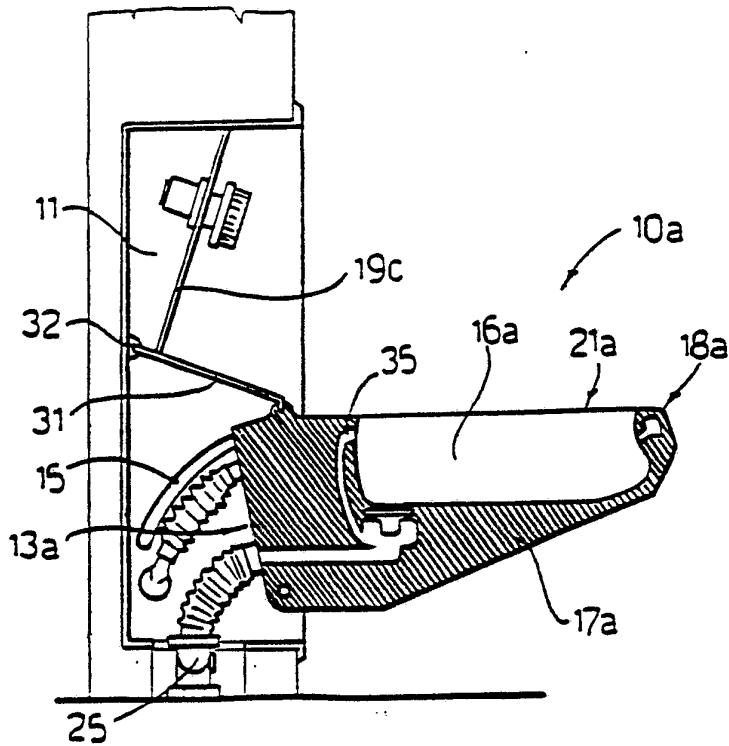
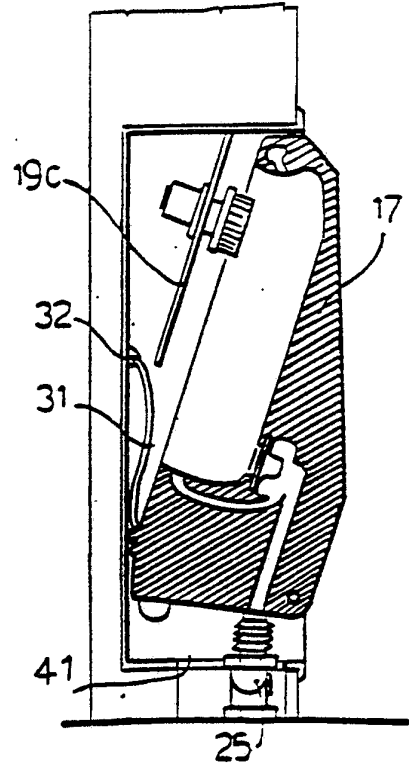


FIG. 4



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FIG. 5

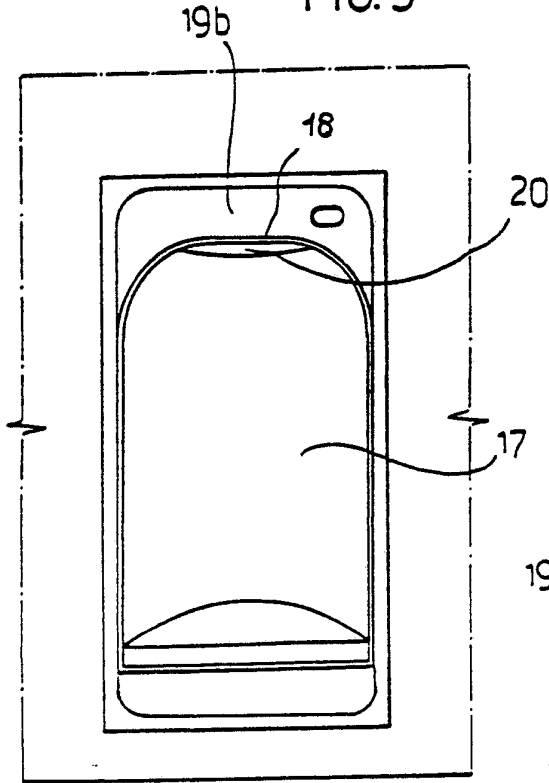


FIG. 6

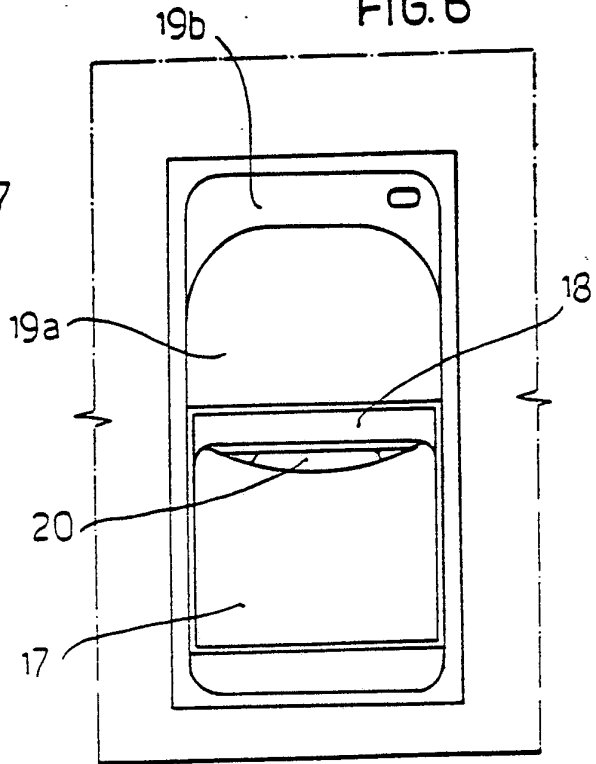


FIG. 8

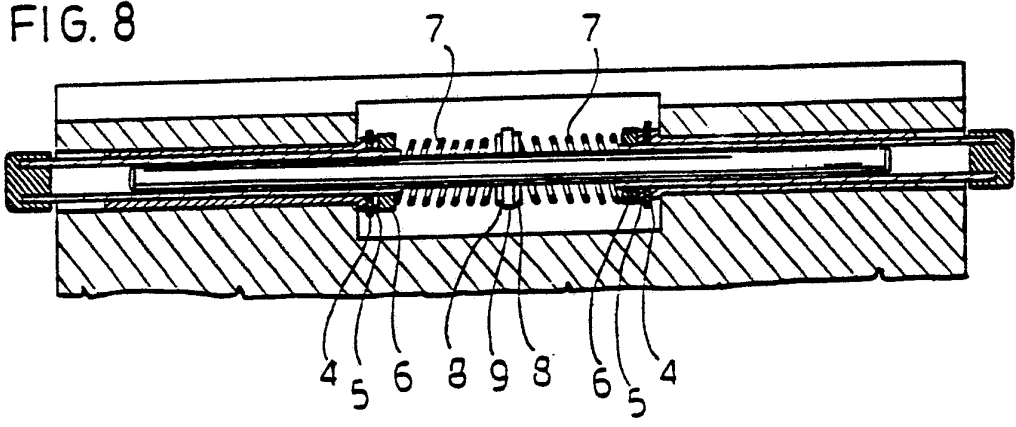
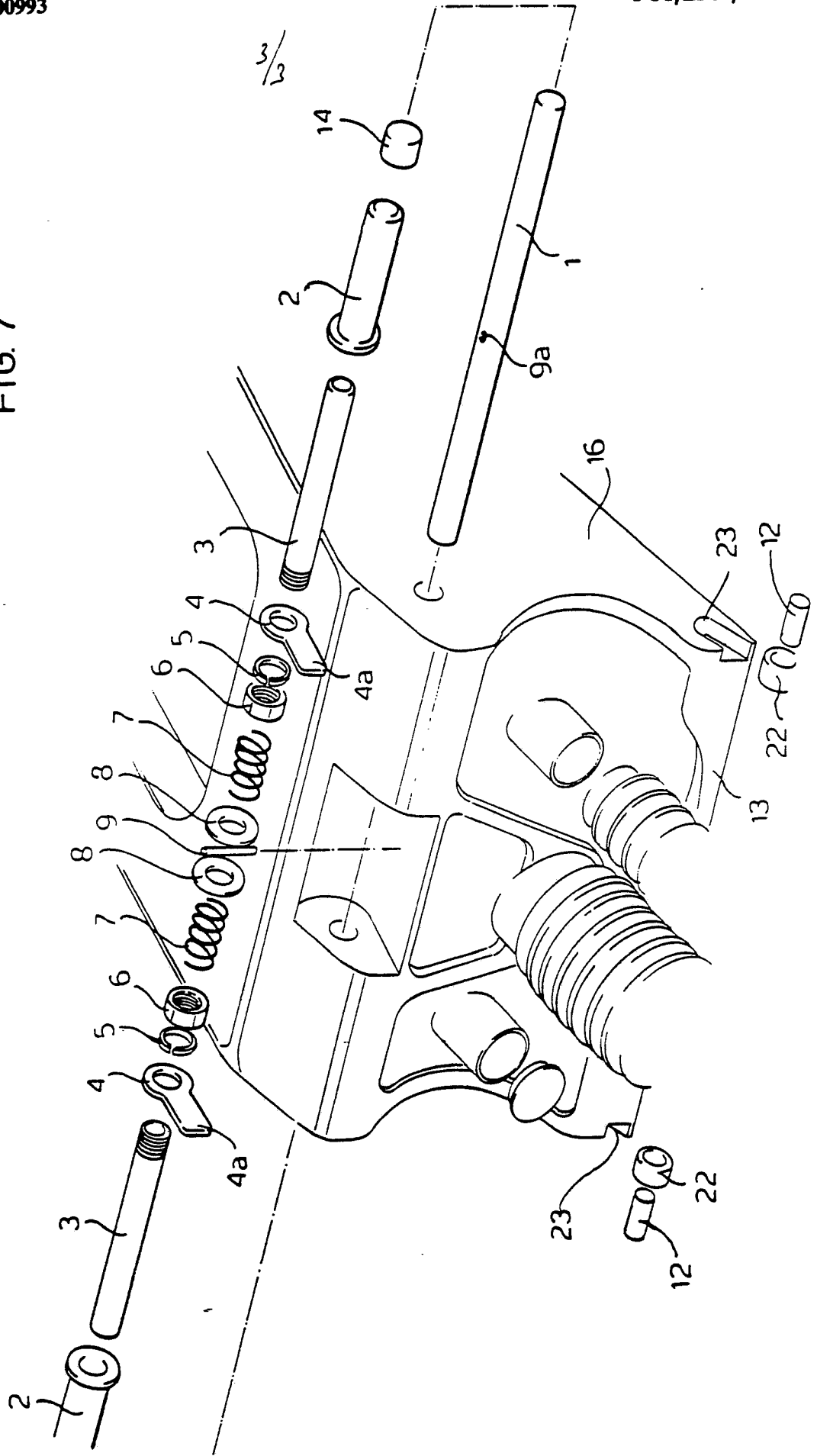



FIG. 7





# INTERNATIONAL SEARCH REPORT

International Application No PCT/EP 87/00406

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC <sup>4</sup> : E 03 D 11/12		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
IPC <sup>4</sup>	E 03 D; A 47 K; E 05 D; E 03 C	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT <sup>9</sup></b>		
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	US, A, 2076950 (KOCH) 13 April 1937 see page 2, column 1, lines 15-56; figures 1-3	1,2,5,6,12
Y	--	4
Y	US, A, 3608100 (TROST) 28 September 1971 see column 2, lines 1-45; figures 1-3	4
	--	
A	US, A, 3977044 (MORT) 31 August 1976 see figures 1-3	4
	--	
A	US, A, 2794988 (COLONNA) 11 June 1957 see column 5, lines 5-10; column 6, line 15; figures 1-3,9	1,3,5,6,9,13
	--	
A	FR, A, 1502879 (ROUSSEAUX) 24 November 1967 see figures 1,2	1,8,13
	--	
A	DE, C, 58677 (KARFUNKEL) 6 March 1891 see claim 1; figures 2,3	13
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<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
28th October 1987	23 NOV 1987	
International Searching Authority	Signature of Authorized Officer	
EUROPEAN PATENT OFFICE	M. VAN MOL 	

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON  
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INTERNATIONAL APPLICATION NO. PCT/EP 87/00406 (SA 18305)  
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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 2076950		None	
US-A- 3608100	28/09/71	None	
US-A- 3977044	31/08/76	None	
US-A- 2794988		None	
FR-A- 1502879		None	
DE-C- 58677		None	

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see Official Journal of the European Patent Office, No. 12/82