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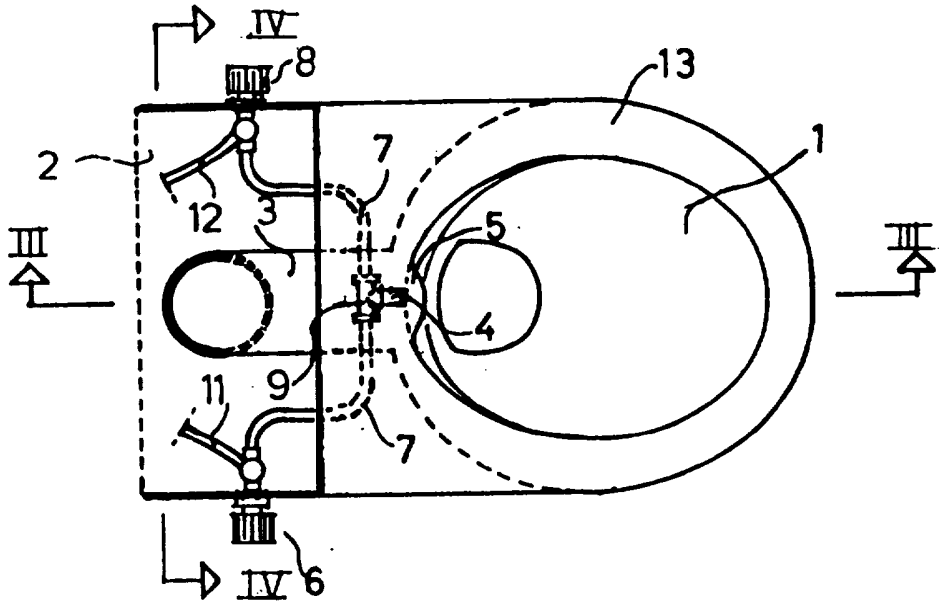
(54) Title: COMPOSITE WC-BIDET LAVATORY PAN, WITH A BUILT-IN PIPING SYSTEM



(57) Abstract

In this composite WC-bidet lavatory pan (1), a built-in piping system (7, 9, 4) is provided and which is installed at the rear internal part of the lavatory pan (1). Said built-in system (7, 9, 4) is connected to outer cold and/or hot water supply lines (12, 11). It has at least one water outlet nozzle (4), located at the back of the rim (13) of the lavatory pan (1). Taps (6, 8) are provided at the sides of the lavatory pan (1) for controlling cold and hot water flow. Alternative use of a sole mixing device (tap) for controlling simultaneously the flow as well as the temperature of the ejected water is possible. A lone normal tap may be used in case hot water is not available.

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"Composite WC-bidet lavatory pan, with a built-in piping system"

The present invention relates to a composite WC-bidet lavatory pan, with particular referance to a built-in piping system, equipped with flow control means, via which, cold and/or hot water is supplied and ejected from the rim of the lavatoy pan inwards, thus extending the use of the WC lavatory pan to bidet use.

Lavatory pans combining WC and bidet operation in one piece of equipment have been already described in many documents. The common advantages of such equipment are:

a) The use of the WC lavatory pan also for bidet use.

b) The saving of space in bathrooms, due to combination of WC lavatory pan and bidet into one item.

c) The saving of costs, due to the advantage above.

d) The ability it offers to people who donot use toilet paper(who account for a considerable proportion of the population worldwide) to use the WC lavatory pan as a bidet.

Such composite WC-bidet lavatory pans need, of course, a system for supplying and ejecting cold and/or hot water, or a mixture thereof, with taps or a mixing device for controlling the water flow and temperature. Various water supply systems have already been disclosed:

- Independent water supply systems located on the side of the lavatory pan-see for example European patent application no 0051982.

- Water supply systems incorporated on the cover of the lavatory pan- see for example international patent applications no WO 85/01765 and no WO 93/25770.

- Water supply systems protruding on the rear part of the lavatory pan- see for example French patent application no 2682703 and international patent application no WO 92/10622.

- Water supply systems housed in the rear part of the lavatory pan- see for example French utility certificate no. 2646451.

These prior art devices are complex and expensive solutions, involving adding of complicated water supply systems and/or important modifications of the design of the lavatory pan. Further, protruding into the bowl water supply systems may be dangerous and of course unhygienic and unaesthetic. Furthermore, water supply systems with metallic parts embedded in the core of the lavatory pan, are not easy to manufacture.

The object of the present invention, is to provide an improved composite WC-bidet lavatory pan, having a simplified and more compact water supply system, allowing cheaper industrial production of this WC-bidet lavatory pan, thus eliminating the disadvantages of the prior art devices.

According to the invention, in a composite WC-bidet lavatory pan of the above-discribed type, a built-in piping system is provided. This piping system is located at the rear internal part of the lavatory pan, said

built-in piping system been designed to be connected to outer cold and/or hot water supply lines and having at least one water outlet opening, in the form of a single or multiple hole nozzle, located at the back of the rim of the lavatory pan.

Due to this arrangement, the supply of water to the nozzle, through which it is ejected towards the inner part of the lavatory pan, is achieved via a specially designed piping system. This piping system extends towards the two rear side parts of the lavatory pan, where it is connected to the outer cold and/or hot water supply lines, located at the wall behind the lavatory pan. Commercially available taps which are connected through appropriate holes at the sides of the lavatory pan, for the controlof the water flow, may be used, similar to those commonly used in commercially available wash-basin units. In a preferred embodiment of the invention, first and second taps are respectively located at the two side parts of the lavatory pan, for controlling supply of cold and/or hot water. A single mixing tap controlling simultaneously cold and/or hot water supply and installed on either of the provided locations of the normal taps, at the sides of the lavatory pan, may also be used.

Industrial working of the invention needs only a slight modification of the mold used to produce the lavatory pan, without altering the basic characteristics of commercially available WC lavatory pans. The shape of the built-in piping system allows its location on both sides and in front and over the centrally located conventional flashing duct, which is appropriately lowered and which is connected to the high or low pressure cistern, the invention using the free space around said flashing duct.

According to a further feature of the invention, the built-in system of pipes runs in an inclined way from the taps to the ejecting nozzle; this eliminates undesirable collection of water in the system of pipes. This additional feature provides a clean and hygienic supply of water. The built-in system of pipes, comprises a centrally located T-shaped piping unit, where cold and hot water are mixed, terminating in the said water ejecting nozzle.

An embodiment of the invention will now be described, by way of an example, with reference to the attached drawings, in which:

Figure 1 is a perspective view of the composite WC-bidet lavatory pan, according to the invention.

Figure 2 is a top plan view of the lavatory pan, taken along the line II-II of figure 3.

Figure 3 is a longitudinal sectional view of the lavatory pan, taken along the line III-III of figure 2.

Figure 4 is a vertical sectional view of the lavatory pan, taken along the line IV-IV of figure 2.

Figure 5 is a full-size section of the T-shaped piping unit and the ejecting nozzle.

Figure 6 is a full-size front view of the outer head of the nozzle.

As can be seen in figures 1 to 4, the said composite WC-bidet lavatory pan consists of a WC lavatory pan 1, which is flushed (according to the drawings presented) by a low pressure cistern 2, via a flushing duct 3, a siphon connection 10 been provided at the back of the lavatory pan 1.

Numerals 7 and 9 indicate a built-in system of pipes, which is located at the rear part of the lavatory pan 1. As can be seen, from figures 1 to 5, the system of pipes 7 and 9, is located at the rear part of the lavatory pan 1 and are connected to the two side taps 8 and 6 for cold and/or hot water, as well as to the ejecting nozzle 4, said nozzle piercing the rim 13 of the lavatory pan 1. For the sake of additional cleanliness and hygiene, nozzle 4 is protected by a small projection 5 of the rim 13 of the lavatory pan 1.

A hot water outer supply line 11 is connected to the first side tap 6 of the system of pipes 7and 9. A cold water outer supply line 12 is connected to the second side tap 8 of the system of pipes 7. The mixing of hot and cold waters is effected in the T-shaped piping unit 9 of the system of pipes 7 and 9.

As shown in figure 3 and 4, the system of pipes 7 and 9 is inclined, its front part being lower than its rear part, this avoiding water to collect and become stale inside the piping system. The angle of the water ejecting nozzle 4, may be such as to direct the water to any desired degree, upwards or downwards. The openning diameter of the nozzle may vary. In the details herein, a 12 milimeter opening is shown.

As shown in figures 5 and 6, the fixing of the ejecting nozzle 4 to the wall of the rim 13 of the lavatory pan 1 , is achieved by the use of elastic washers 14 and the nut 15 which stabilises the nozzle 4, with the help of slots 16.

Due to the space needed for the passing of the transverse part of the piping system 7 and 9, the flashing duct 3 is lowered by approximately 3 cm, with respect to the region where it is usually connected to the rim 13 of the lavatory pan 1. This will not influence the water flow for flushing, after making an appropriate small change to the mold of the lavatory pan 1, in order to improve the flow of the flushing water. Otherwise, the method for industrial production of this lavatory pan, combining WC and bidet features, is not different from that used for the production of common WC lavatory pans that are commercialy available.

Only one embodiment of this composite WC-bidet lavatory pan has been shown and described in detail herein; however, various changes and modifications may be made without departing from the scope of the invention. For example, the two taps may be replaced by a sole mixing device(tap), installed on either side of the lavatory pan, simultaneously controlling cold and hot water supply. The system of piping 7 and 9, connected to the nozzle 4, may take numerous variations, especially when a sole

mixing tap is used, or a sole normal tap is used for cold water supply only.

The principle of the invention may be carried out in a lavatory pan with a low siphon or a high-pressure cistern as well.

C L A I M S

1. Composite WC-bidet lavatory pan, with a built-in piping system, having cold and/or hot water supply system, equiped with flow control means, via which water is supplied and ejected from the rim of the lavatory pan inwards, thus extending the use of the WC lavatory pan to bidet use, characterized in that a built-in piping system (7,9 and 4) is provided, said piping system located at the rear internal part of the lavatory pan (1), said built-in system of pipes (7,9 and 4) been designed to be connected to outer cold and/or hot water supply lines (12,11) and having at least one water outlet nozzle (4), located at the back of the rim (13) of the lavatory pan (1).

2. Composite WC-bidet lavatory pan according to claim 1, characterized in that the built-in piping system extends towards the two rear side parts of the lavatory pan (1), where it is connected to the outer cold and/or hot water supply lines (12,11).

3. Composite WC-bidet lavatory pan according to claims 1 and 2, characterized in that the built-in piping system (7,9 and 4), surrounds the flushing duct (3), which is lowered downwards.

4. Composite WC-bidet lavatory pan according to claims 1,2 and 3, characterized in that the two side and transverse piping parts are linked by a front part T-shaped unit (9) and a central outlet nozzle (4) attached to it.

5. Composite WC-bidet lavatory pan according to claim 4, characterized in that the central outlet nozzle (4) is protected by a small projection (5) of the rim of the lavatory pan (1)

6. Composite WC-bidet lavatory pan according to any of claims 1 to 4 , characterized in that first and second taps (6,8) are respectively located at the two sides of the lavatory pan (1), for controlling supply of cold and hot water.

7. Composite WC-bidet lavatory pan according to claim 6, characterized in that in some cases where hot water will not be available at the back wall of the lavatory pan , a sole tap may be used for supplying only cold water.

8. Composite WC-bidet lavatory pan according to claim 7, characterized in that in the case of using a lone tap for cold water supply only, the hot water branch of the piping system 7 will be omited.

9. Composite WC-bidet lavatory pan according to any of claims 2 to 6, characterized in that, the two taps (8,6) for controlling cold and/or hot water may be replaced by a sole mixing device (tap), located on either side of the lavatory pan, simultaneously controlling cold and hot water supply (12,11).

10. Composite WC-bidet lavatory pan according to any of claims 1 to 9, characterized in that the built-in piping system (7,9,4) is inclined, its front part being lower than its rear part.

11. Composite WC-bidet lavatory pan according to any of claims 1 to 10, characterized in that the built-in piping system (7,9,4) comprises a central T-shaped mixing unit (9), terminating in said water nozzle (4).

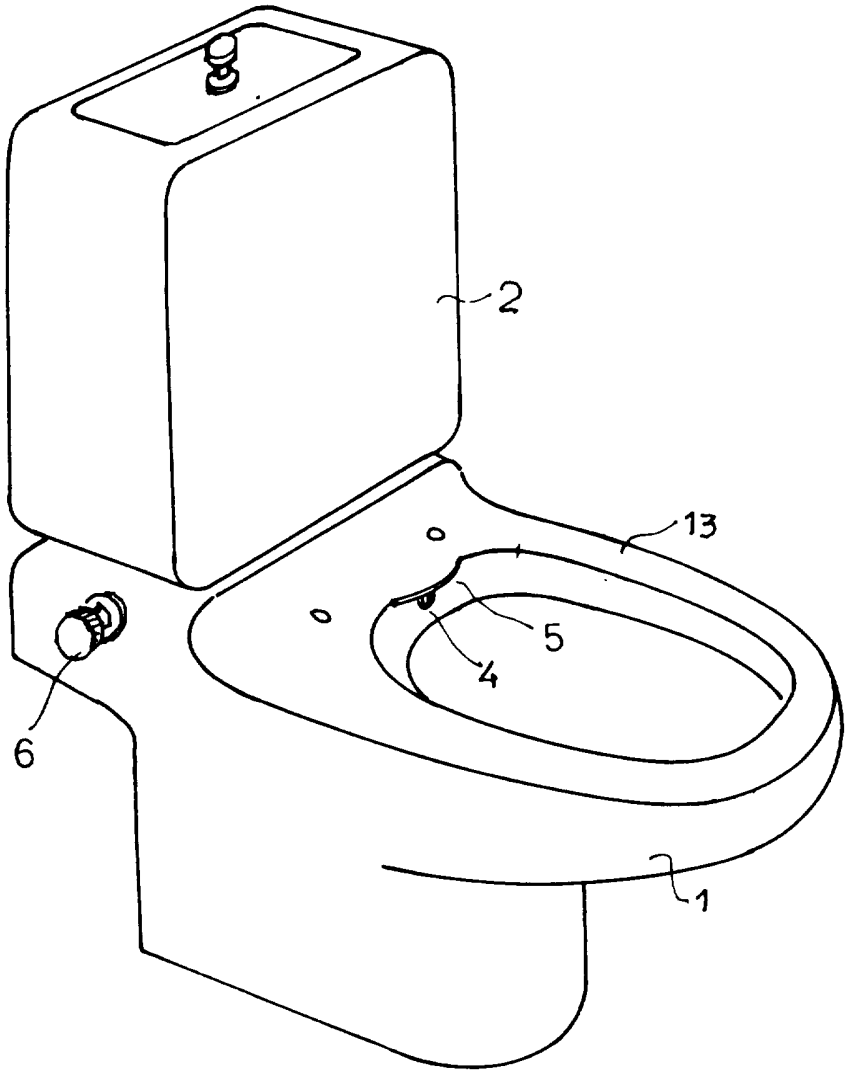

FIG. 1

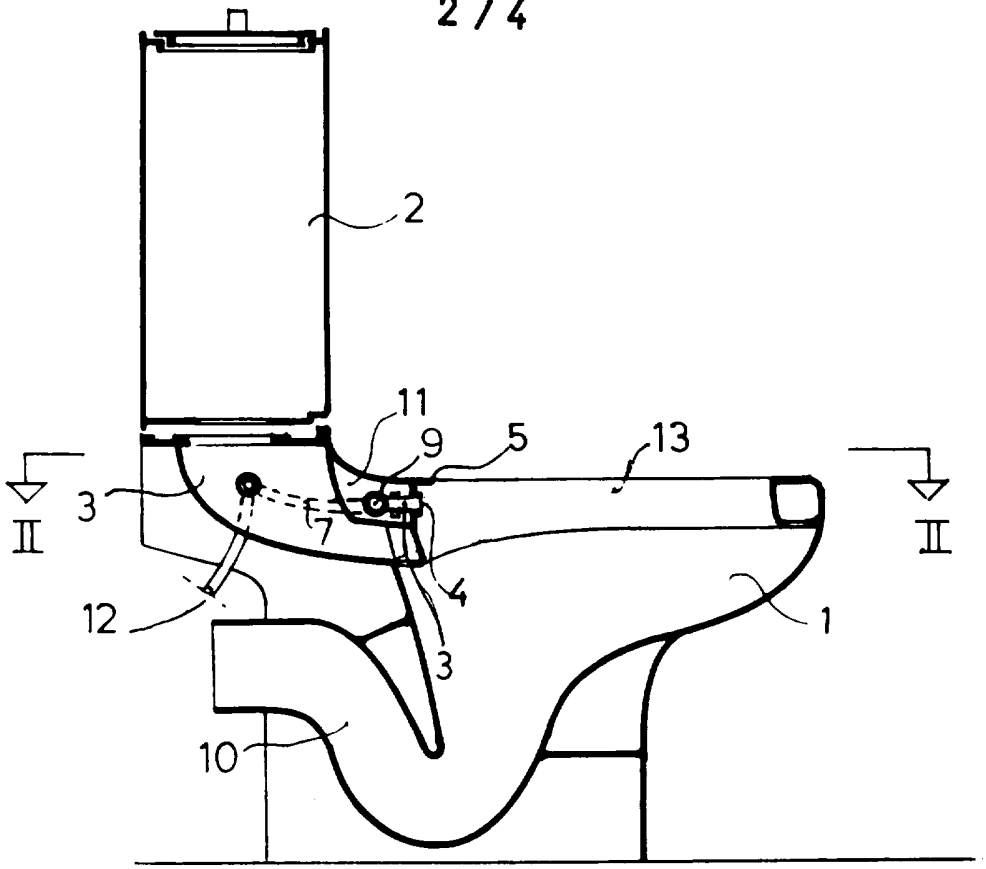

FIG. 3

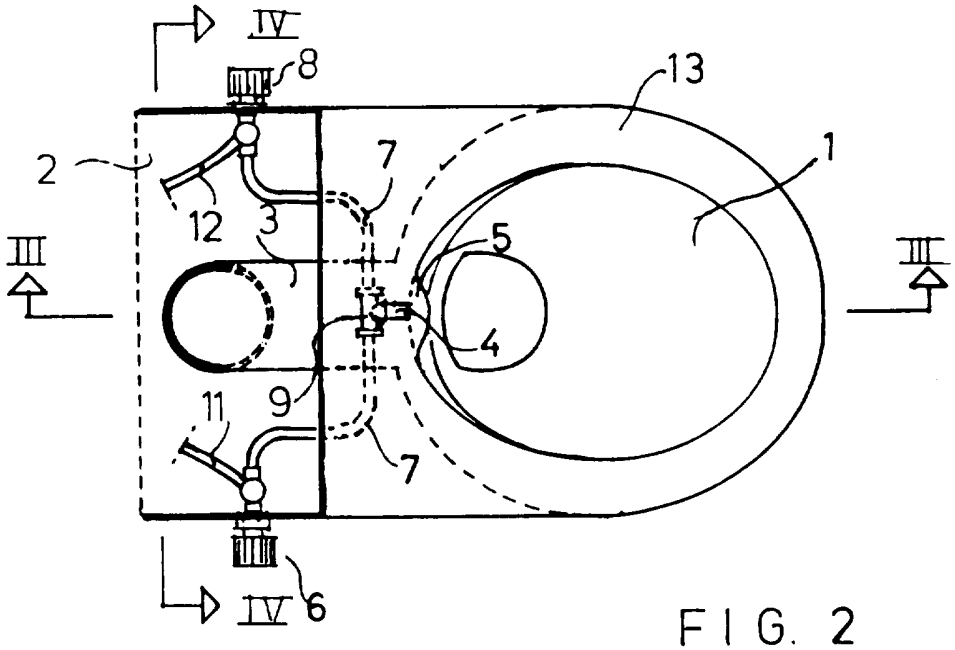

FIG. 2

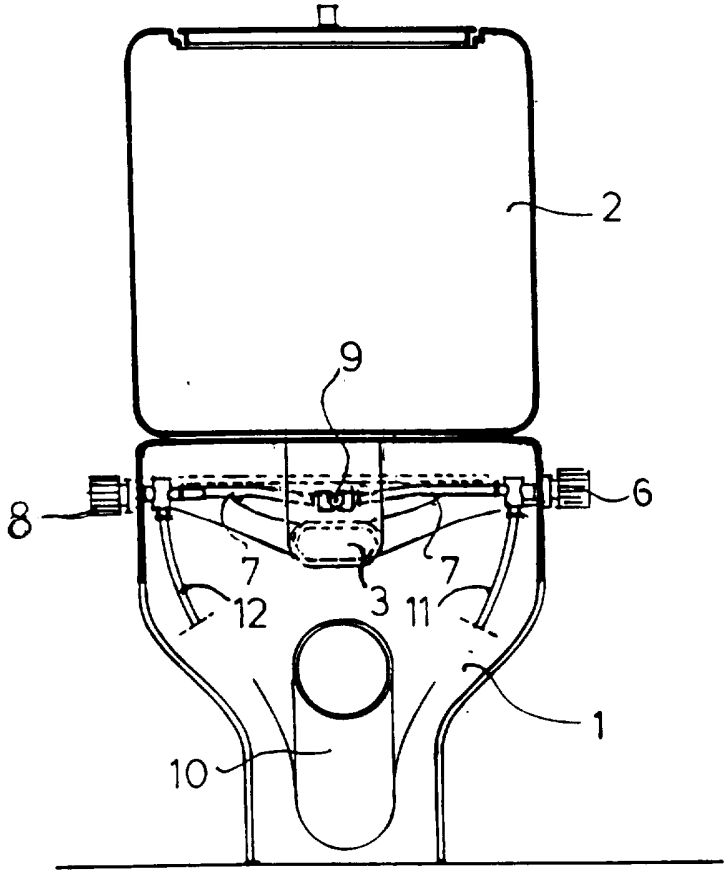

FIG. 4

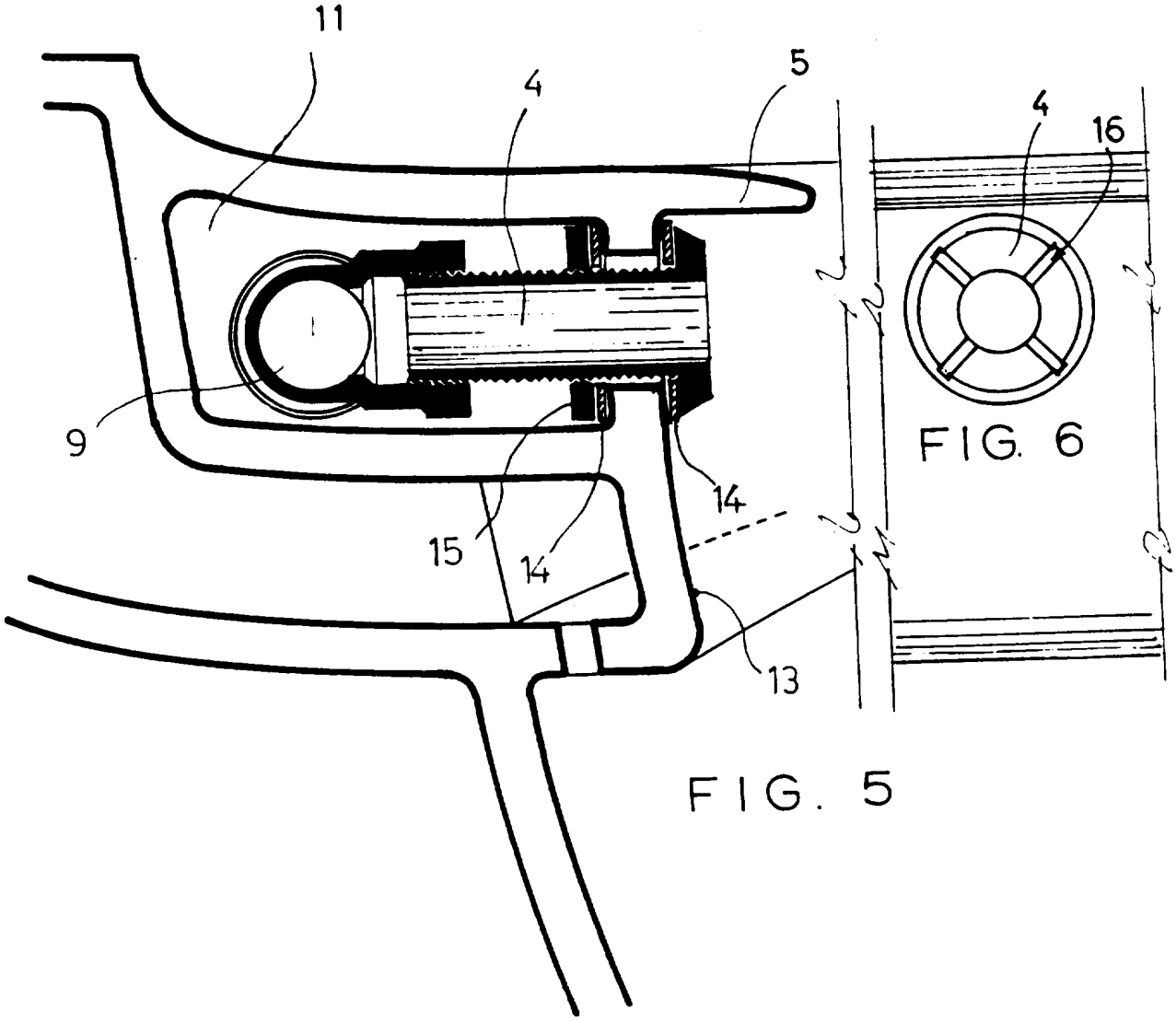

FIG. 5

FIG. 6

INTERNATIONAL SEARCH REPORT

Inter nal Application No
PCT/GR 96/00009

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 E03D9/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 E03D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	GB,A,356 253 (GHERSA) 1 October 1931	1,2,4-6, 10,11
Y	see the whole document	9
A		3

X	FR,A,2 646 451 (TORRES FENOLL) 2 November 1990 cited in the application	1
Y	see claims	9
A		2-8,10, 11

X	GB,A,429 208 (ZORRAQUIN) 20 June 1935	1,11
A	see figures	2-10

X	US,A,2 762 058 (HURKO) 11 September 1956	7,8
A	see figure 4	1-6,9-11

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[X] Further documents are listed in the continuation of box C.

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Date of the actual completion of the international search	Date of mailing of the international search report
4 July 1996	12. 07. 96

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP,A,0 530 965 (WANSAN-KU) 10 March 1993 see figure 4 -----	7,8 1-6,9-11

2

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Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A-356253		NONE	
FR-A-2646451	02-11-90	DE-U- 9004339	16-08-90
GB-A-429208		NONE	
US-A-2762058	11-09-56	NONE	
EP-A-0530965	10-03-93	NONE	