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(54) A toilet seat made of soft hygienic plastic material

(57) The present invention relates to a toilet seat made of soft hygienic plastic material, such as EVA, characterised by the presence of holes or ducts with horizontal axis on its rear edge and on the rear edge of the cover, capable of perfectly aligning with the perforated ends of a pair of brackets (S) fixed to the toilet bowl to allow for the insertion of one or more pins to connect the seat with cover to the toilet bowl.

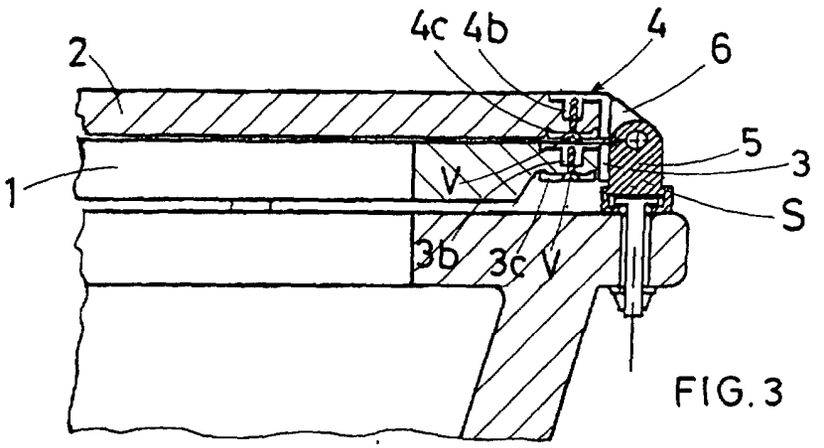

FIG. 3

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Description

[0001] The present patent application for industrial invention relates to a toilet seat with cover made of soft hygienic plastic materials, such as EVA.

[0002] As it is known, toilet seats are normally made of rigid plastic materials and although capable of providing correct operation, they are partially impaired by the material rigidity.

[0003] This is why toilet seats are quite uncomfortable and cold for their users, as well as quite noisy and fragile due the impact with the hard ceramic of the toilet bowl.

[0004] In order to overcome the inconveniences of the state-of-the-art technique, a toilet seat with cover made of soft hygienic plastic materials, such as EVA, has been devised.

[0005] This material has been chosen for its particular structure: EVA is a closed-cell material and therefore it does not absorb liquids of any kind.

[0006] Moreover, the use of EVA for toilet seats has allowed to overcome a typical limitation of plastic materials with soft structure.

[0007] As it is known, this material is not very resistant and not very compact and this makes it impossible to use screws or other fixing means to fix the seat to the ceramic toilet bowl.

[0008] According to the traditional technique, two small brackets are vertically positioned on the rear edge of ceramic toilet bowls in order to fix the seat. The brackets are centrally perforated in their upper part. A pin with horizontal axis is normally inserted through the holes located on the upper part of the brackets. The passage of the pin through the holes located on the rear edge of the seat ensures the stable fixing of the seat to the brackets mounted on the toilet bowl, with the possibility of lifting up the seat.

[0009] In order to provide compatibility between the seat according to the present invention and the fixing brackets that are normally used on toilet bowls, the rear edge of the seat according to the present invention and the rear edge of the cover are fastened by a suitable longitudinal piece of rigid plastic (a "rib") that features a "C-shaped" transversal cross-section and incorporates perforated orecchiole in edgewise position on the back.

[0010] The location and the height of the orecchiole are such that their holes are close and perfectly aligned with the holes of the brackets fixed to the toilet bowl. This allows for inserting one or more pins with horizontal axis into the aligned holes located on the orecchiole of the seat and the cover and on the brackets fixed to the toilet bowl.

[0011] An alternative embodiment provides for the realisation of a duct with circular cross-section and horizontal axis on the back of the seat (in reality the duct is partially realised on the body of the seat and partially on the body of the cover). The upper perforated end of the two brackets fixed to the ceramic toilet bowl is inserted into the duct so that the holes of the brackets are perfectly aligned with the horizontal duct located on the seat and the cover.

[0012] The seat according to the present invention and its cover can be fixed to the toilet bowl by means of a pin with circular cross-section, capable of simultaneously inserting into the horizontal duct located on the back of the seat and into the holes of the brackets inserted in the duct.

[0013] For major clarity the description of the invention continues with reference to the enclosed drawings, which are intended for purposes of illustration and not in a limiting sense, whereby:

- Figs. 1 and 2 are respectively a top view and a rear view of the fixing means used to fix the EVA seat according to th e present invention to the toilet;
- Fig. 3 is a cross-section of Fig. 2 with the plane III-III;
- Figs. 4 and 5 are respectively a top view and a rear view of an alternative embodiment of the fixing means used to fix the EVA seat to the toilet;
- Fig. 6 is a cross-section of Fig. 5 with the plane VI-VI;
- Fig. 7 is an exploded axonometric drawing of the rear section of the seat shown in Fig. 1.

[0014] With reference to Figs. 1, 2 and 3, the EVA seat (1) according to the present invention is characterised by the fact that the rear rectilinear edge (1a) and the rear rectilinear edge (2a) of the cover (2) are fastened along the entire length by means of suitable longitudinal pieces (3 and 4), from which pairs of rounded bodies (5 and 6) with holes (5a and 6a) protrude in edgewise position in order to engage with the two perforated brackets (S) that are vertically fixed on the rear edge of the toilet bowl.

[0015] With particular reference to Fig. 3, each longitudinal piece (3 and 4) is made up of two elements that are matched by means of screws (V) with vertical axis. The first element is a profile (3a and 4a) with "L-shaped" transversal cross-section and its horizontal wing engages against the upper side of the seat (1) and the cover (2), while its vertical wing engages against the rear of the seat (1) and the cover (2).

[0016] Some internally threaded bushes (3b and 4b) are located under the horizontal wing of the profile (3a and 4a) and inserted into the upper opening section of vertical through holes (1b and 2b) drilled on the EVA structure of the seat (1) and the cover (2).

[0017] The second element consists in a plate (3c and 4c) having approximately the same length of the horizontal wing of the profile (3a and 4a), which engages against the lower side of the seat (1) and the cover (2).

[0018] Each plate (3c and 4c) features holes (3d and 4d) located in corresponding positions with respect to the threaded bushes (3b and 4b) under the horizontal wing of the profile (3a and 4a). Once the plates (3c and 4c) have been positioned, the holes (3d and 4d) of the plates (3c and 4c) are perfectly aligned with the lower

opening of the vertical holes (1b and 2b) drilled on the EVA structure of the seat (1) and the cover (2).

[0019] As shown in Fig. 2, the two elements of each longitudinal piece (3 and 4) match and firmly hold the rear edge of the seat (1) or the cover (2) by means of suitable screws (V). Each screw (V) is inserted from below into one of the holes drilled on the plates (3c and 4c) and subsequently into the vertical hole (1b and 2b) drilled on the EVA structure of the seat (1) or the cover (2), until it engages with the bush (3b and 4b) of the longitudinal piece (3 and 4) inserted into the upper section of the hole (1b and 2b) drilled on the EVA structure.

[0020] Fig. 2 shows the position of the two pairs of perforated round bodies (5 and 6) protruding from the back of the longitudinal piece (3) fixed on the seat (1) and from the back of the longitudinal piece (4) fixed on the cover (2), with respect to the perforated brackets (S) fixed to the ceramic toilet bowl. Although capable of rotation, the round bodies (5) of the seat (1) touch the internal side of the brackets (S), while the round bodies (6) of the cover (2) touch the external side of the brackets (S).

[0021] In this way, each bracket (S) fixed to the toilet bowl remains between two perforated round bodies: the first body (5) protruding from the back of the seat (1) and the second body (6) protruding from the cover (2).

[0022] Fig. 2 also shows that, once the seat according to the present invention has been installed on the toilet bowl, the holes (5a and 6a) of the round bodies (5 and 6) and the holes of the fixing brackets (S) are perfectly aligned horizontally, so that the insertion of a pin through the holes allows for joining each bracket (S) of the toilet bowl with the round body (5) of the seat (1) and the round body (6) of the cover (2).

[0023] With reference to Figs. 4, 5 and 6, the seat according to the present invention has also been designed with a different constructive version, which is equivalent to the one described above, in which the connection between the seat and the fixing brackets (S) of the toilet bowl is obtained by means of a pin with horizontal axis.

[0024] Figs. 4 and 5 show that in this case the rear edge of the seat (11) features a central cavity (11a) capable of housing a border (12a) which is centrally located under the rear edge of the cover (12).

[0025] In particular, the length of the cavity (11a) of the seat (11) is such that - once the entire manufacture has been installed on the toilet bowl - the cavity can house the two brackets (S) protruding from the toilet bowl at its ends and the border (12a) of the cover (12) in the long space comprised between the two brackets (S).

[0026] Once the cover (12) is positioned over the seat (11), the duct with circular cross-section (12b) located in horizontal transversal position along the entire length of the border (12a) of the cover (12) is perfectly aligned with two shorter ducts (11b) with identical circular cross-section, located on the back of the seat (11) on the right and left of the central cavity (11 a).

[0027] Figs. 4, 5 and 6 show that the ducts (11b and 12b) are perfectly aligned horizontally with the holes located on the upper part of the two brackets (S) of the toilet bowl. The presence of a pin with horizontal axis, having appropriate length in order to be simultaneously inserted into the ducts (11b and 12b) and into the two holes of the brackets (S) ensures the stable connection of the seat (11) and the cover (12) with the brackets (S) fixed to the ceramic toilet bowl.

Claims

1. A toilet seat made of soft hygienic plastic material, **characterised by** the presence of holes (5a and 6a) or ducts (11b and 12b) with horizontal axis on its rear edge (1a) and on the rear edge (2a) of the cover (2), capable of perfectly aligning with the perforated upper ends of a pair of brackets (S) fixed to the ceramic toilet bowl to allow for the insertion of one or more pins to connect the seat (1) with cover (2) to the toilet bowl.

2. A toilet seat made of soft hygienic plastic material according to claim 1, **characterised by** the fact that the holes with horizontal axis (5a and 6a), in which the pins are inserted to provide for connection with the perforated brackets (S) of the toilet bowl, are perforated on two pairs of round bodies (5 and 6) in edgewise position and protruding from the rear side of two identical longitudinal pieces (3 and 4), the first one (3) longitudinally fixed to the rectilinear rear edge (1a) of the seat (1) and the second one (4) longitudinally fixed to the rectilinear rear edge (2a) of the cover (2), it being provided that each longitudinal piece (3 and 4) is made up of two elements matched by means of screws (V) with vertical axis, being the first element a profile (3a and 4a) with "L-shaped" transversal cross-section, provided under its horizontal wing with some threaded bushes (3b and 4b) capable of being inserted into suitable through holes (1b and 2b) located on the structure of the seat (1) and the cover (2), and the second element a plate (3c and 4c) having approximately the same length of the horizontal wing of the profile (3a and 4a) and featuring holes (3d and 4d) located in corresponding positions with respect to the threaded bushes (3b and 4b) under the horizontal wing of the profile (3a and 4a).

3. A toilet seat made of soft hygienic plastic material according to claim 1, **characterised by** the fact that the ducts with horizontal axis (11b and 12b), in which the pins are inserted to provide for connection with the perforated brackets (S) of the toilet bowl, are made up of a central duct (12b) located transversally along the entire length of a border (12a) centrally located under the rear edge of the cover

(12) and two lateral duct (11b) perfectly aligned with the central section (12b) located on the rear of the seat (11) on the right and left of a central cavity (11a) in which the border (12a) of the cover (12) engages, with the interposition on the right and left side of the two upper perforated ends of the brackets (S) fixed to the toilet bowl.

4. A toilet seat according to the previous claims, **characterised in that** both the seat and the cover are made of soft hygienic plastic material, known as EVA.

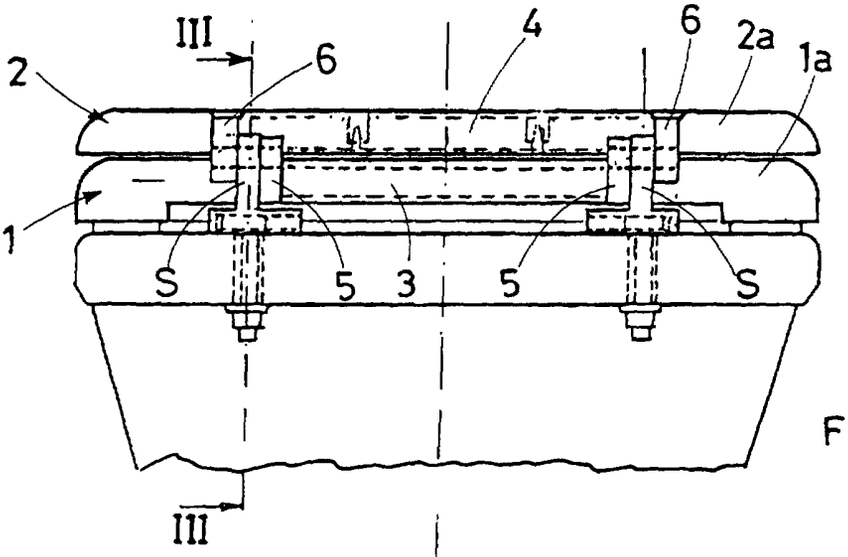

FIG. 2

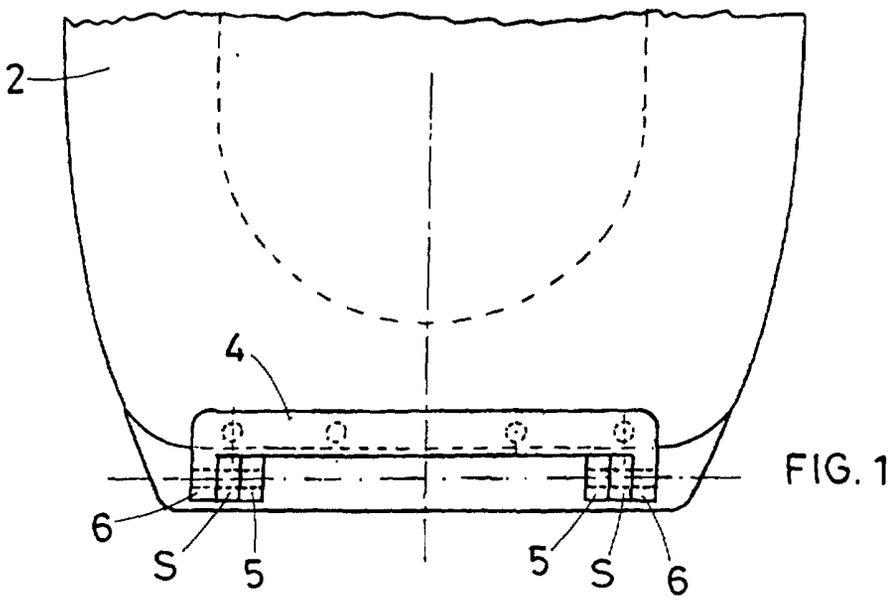

FIG. 1

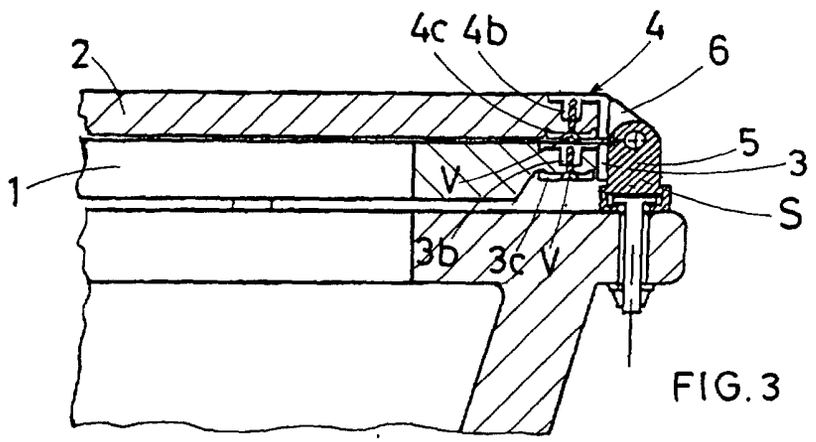

FIG. 3

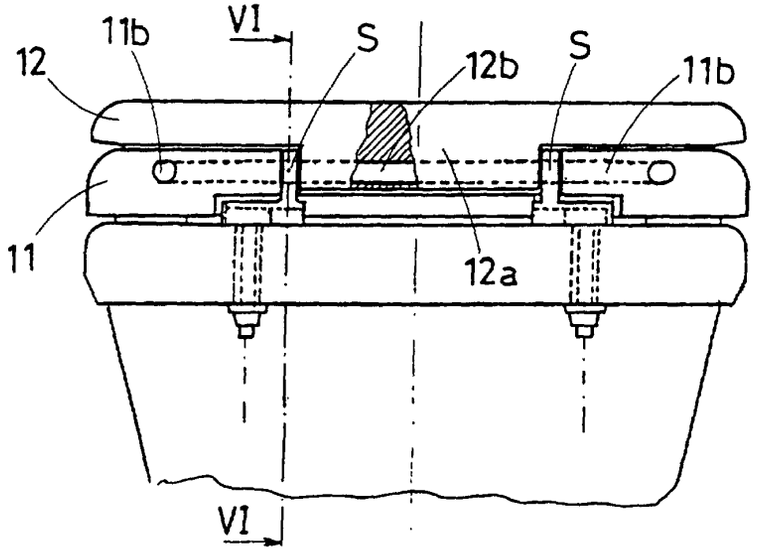

FIG. 5

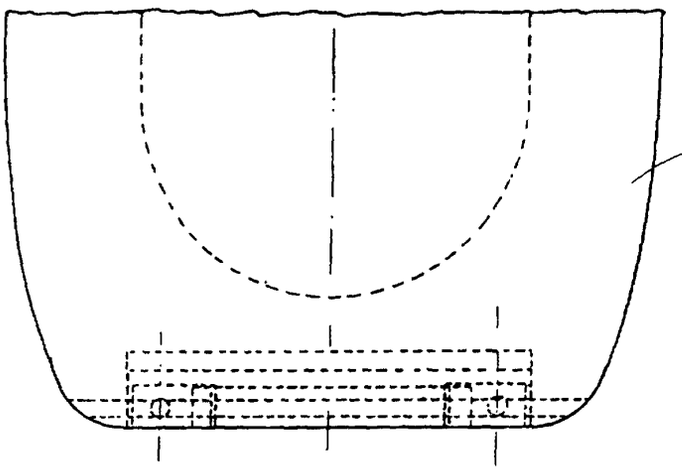

FIG. 4

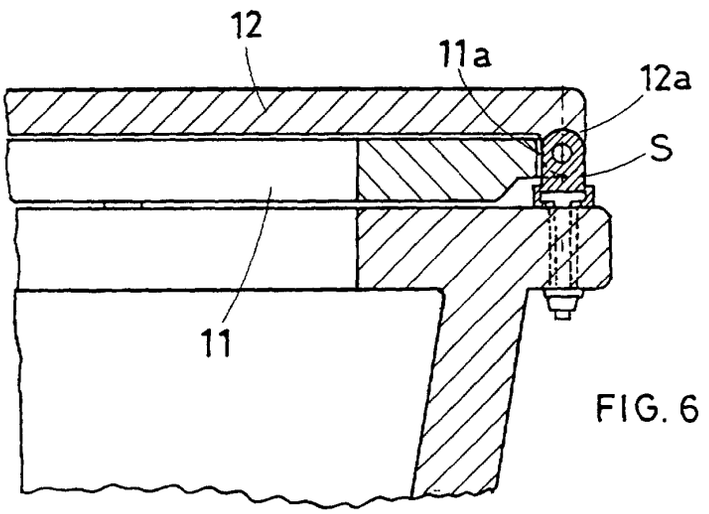

FIG. 6

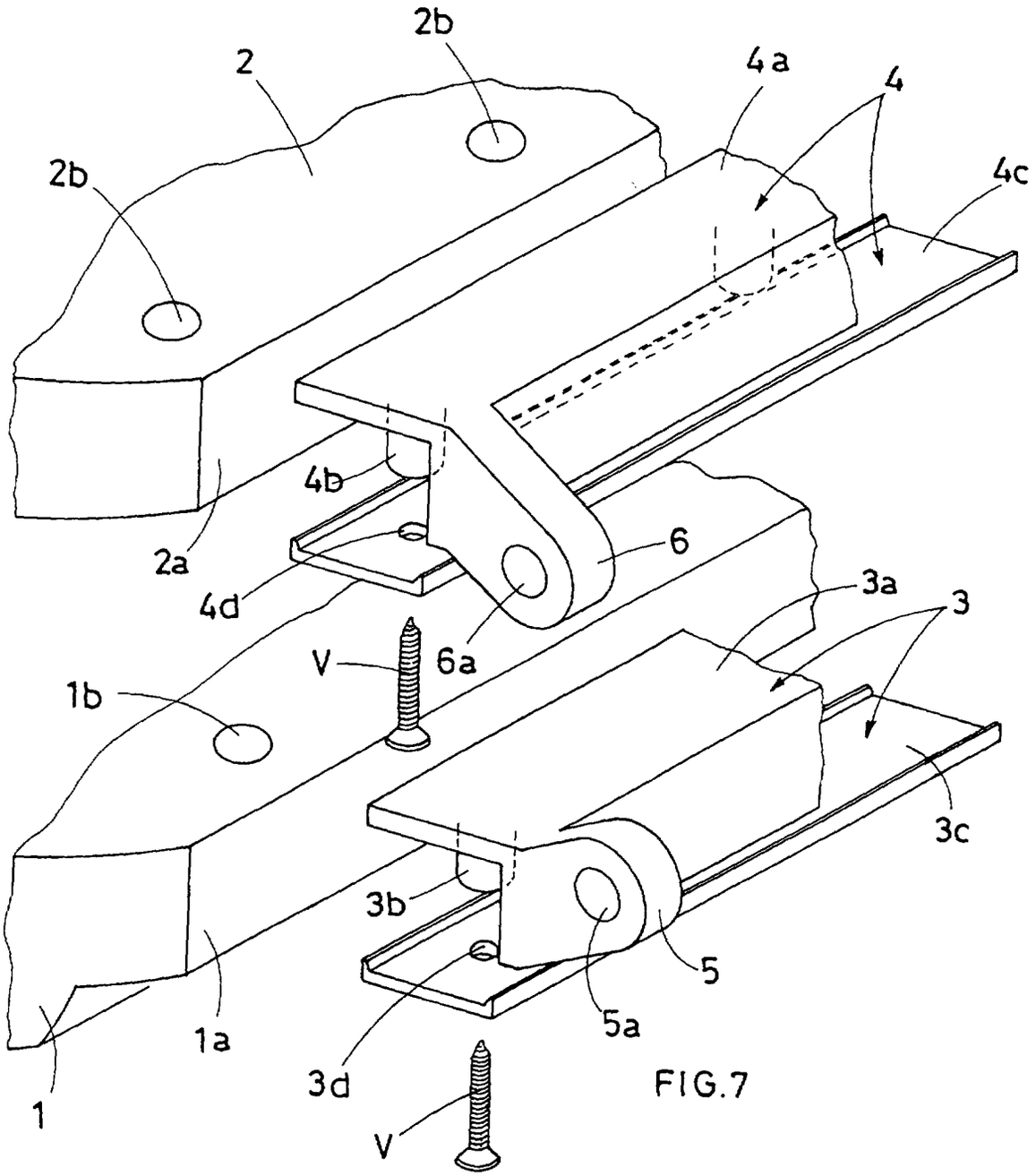

FIG.7

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EUROPEAN SEARCH REPORT

Application Number
EP 00 83 0756

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

A47K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	19 March 2001	Delzor, F

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19-03-2001

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