

Description

[0001] The invention refers to a modification in essential portions of extractor fans of those used mainly at the bathrooms for the extraction of steams and humidities and as a consequence of it s final destination must comprise a series of specific elements which, on the one hand prevent the damages produced by such humidity and steams and on the other hand do not allow the air entering from the outside to the inside of the room or bathroom where such are installed when said extractor fans are in an idle situation.

[0002] Furthermore and as a consequence of the design of such extractor fan being made for bathrooms, it s another object of the present invention the reduction of certain common elements in the extractor fans, such as the connection S connector, the centralization of functions and general electric circuitry of the extractor fan.

[0003] The improvements deal basically in the systems for closing the extractor fan s tunnel, when same is in the idle position, which object is that of avoiding, as a consequence of the difference of temperatures between the outside and the interior, to give place to air draughts, as well as the protection of certain electric and electronic elements, also as well to the attachment system of the extractor fan to the vertical faces or any other support element which is used in said room where it is installed.

[0004] The improved extractor fan incorporates as a system for shutting the tunnel a shutter to the exit of the air of the extractor fan installed in the interior of the room, which in grace to the material out of which it s manufactured and to the attachment system of same allows that in the working position lets a free passage to the air extracted whilst when the extractor fan remains idle said shutter fully stops the entry of air from the outside through the tunnel, avoiding in such a way that the installation of same have an effect on the conditioning of the room or bathroom itself where the extractor fan has been installed when it is not in use.

[0005] In a parallel way there have also been modified the anchoring systems of the extractor fan to the vertical face or walls since it incorporates retention means which may be activated from the inside of the extractor fan and which avoid any type of displacement or vibration of the proposed extractor fan, being added said retention means to the conventional screws with which the extractor fans that may be considered of the state of the art are provided in the corners of the extractor fan s support for binding same to said wall or vertical face.

[0006] Finally, the proposed extractor fan concentrates all the electric installation in a printed circuit board, and in order to avoid to same the undesired effects of the humidities or steam it is protected with the corresponding lid, further achieving a centralization of all the functions of the extractor fan in said printed circuit

board.

[0007] Further details and features of the present Patent of Invention application will be manifest at the description that follows in which, in a rather schematic way, reference is made to the figures which in this description represent the preferred details. These details are given as an example, with reference to a possible practical embodiment, but it s not limited to the details explained herewith; therefore this description must be considered from an illustrative point of view and with no restrictions whatsoever.

[0008] There follows a report of the several elements numbered in the drawings joined to the present description; (10) extractor fan, (11) front lid, (12) window, (13) flaps, (14) support, (14.1) discharge tube, (15) corners, (16) holes, (17) screw, (18) hooks, (19) motor, (20) fan, (21) paddles, (22) electronic circuit board, (23) protector, (24) sight, (25) diffusor, (26) passages, (27) directing paddles, (27.1) emerging zone, (27.2) depressed zone, (28) brackets, (29) shutter, (29.1) notches, (30) hinge, (31) connector, (32) screws, (33) wire, (34) channels, (35) pin, (36) fringe, (37) recess.

Figure 1 is an explosion perspective view of the essential elements and portions of the extractor fan (10).

Figure 2 is an elevation front view of the support (14) and of the elements installed on same.

Figure 3 is an elevation front view of the rear portion of the support (14).

Figure 4 es an upper plant view of the shutter (29).

[0009] In one of the preferred embodiments of what is the object of the present application and as can be seen in Figure 1, the extractor fan (10) is formed with a front lid (13) of a noticeably quadrangular shape in which central portion is provided a window (12), which in turn is provided with flaps (13) horizontal and parallel among themselves.

[0010] Said front lid (13) is attached with the help of the screw (17) on the support (14). The support (14) presents a body of a noticeably prismatic configuration, in which front face is incorporated as above described the front lid (13) whilst at the rear face extends as per a discharge tube (14.1)

[0011] In the interior of the tunnel (14.1) is fitted the electric motor (19) duly attached to the central portion of the support by the suitable screws the shaft of the motor (19) is coupled to the fan (20) of paddles (21) and interior brackets (28) remaining same inside the tube (14.1), being situated over it s outside circular perimeter the diffusor (25), provided with the direction paddles (27), formed by the emerging zone (27.1)) and the depressed zone (27.2)), over wick is mounted the shutter (29) with the help of the hinge (30).

[0012] The proposed improvements bear in the first place in the system of attachment of the extractor fan (10) to the face, wall or the like on which is coupled,

which is done with the help of the hooks (18), see Figure 1, and once fixed to the opening provided in the corresponding wall it is finished fixing the support (14) with the help of the corresponding screws positioned at the corners (15), see Figure 1.

[0013] The hooks (18), as can be seen in Figures 1, 2 and 3, show three different zones, a retention zone (18.1), a spring zone (18.2) and a hook zone (18.3). The hook (18) is attached to the support (14) by the spring zone (18.2) which, since it has a cylindrical interior is coupled to a cylindrical pin (35), in such a way that the hook zone (18.3) remains retained in the fringe (36) and lodged in the channels (34), whilst the retention zone rests on the recess (37) provided in the rear face of the support (14).

[0014] As a further object of the present improvements remains in the front and centered position of all the connection electric and electronic elements in the front portion of the support (14), through the electronic circuit board (22), whose reduced dimensions allows it to be setting in the outer portion of the support (14), see Figure 2, keeping it safe from the undesired actions of steams, liquids and condensations having foreseen that same is protected by means of the protector (23), see Figure 1, in which has been designed the availability of a sight (24) corresponding with the brackets (28) that is in the lower portion of the front lid (13), not causing therefore any hindrance said protector (23) design and the protection of the circuit in order that the control pilot light, not shown in the Figures, may be seen from the outside through the protector (23) and the front lid (13).

[0015] Furthermore, other of the improvements foreseen in the present invention consist in the design of a small connector (31) which centralizes the electric wires (33) which relate to the hooks (18) as well as the hooks (18) and the electronic circuit board (22), see Figure 1.

[0016] Another further object of the present invention is the presence of the shutter (29) of a noticeably circular configuration provided at the diametral zone with the notches (29.1) which allow in the operating position of the extractor fan (10) and because of the pressure generated by the movement of the fan (20) and the paddles (21) that the shutter (29) bends at the notches (29.1) allowing the passage of the air extracted from the room or bathroom where the extractor fan (10) is fitted and not offering any kind of resistance to it, being provided its construction with plastic materials or the like whose resistance to torque is minimal.

[0017] When the extractor fan (10) goes to the idle position, the own inertia of the material in which has been constructed the shutter (29) allows that same returns to its original position shutting the circular opening of the discharge tube (14.1) and preventing in this way that the temperatures difference between the outside and the interior of the room where the extractor fan has been installed to be the cause for the air, water, steams and other undesired elements to penetrate from

the outside towards the interior.

[0018] A further object of the present invention is the working action of the hooks (18), which, when in the idle situation, occupy the above described position and represented in Figures 2 and 3, whilst in the working position and when the installer adjusts the discharge tube (14.1) to the opening provided at the wall, the hook (18.3) will be practically perpendicular to the plane of the support (14), pressing strongly in the counter-clockwise sense at an angle of approximately 90° till snapping fitting the retainer (18.1) into the fringe (36) in such a way that the retainer (18.1) exerts a retention strength on the side walls of the opening made for the assembly of the extractor fan (10).

[0019] Another further object of the present invention consists in the improvements introduced in the disposition of the paddles (21) in the fan (20) in which, in grace to the proposed improvements are planed asymmetrically, see Figure 1, by which are avoided the noises and vibrations over the levels acceptable for the user, all that in combination with the design of the direction paddles (27) above described.

[0020] Enough described in what the present Patent of Invention consists, it is understood that in same may be introduced whatever detail modifications deemed convenient always provided that the variations introduced do not alter the essence of the Patent which is summarized in the following Claims

Claims

1. "IMPROVEMENTS INTRODUCED IN THE ULTRA-COMPACT EXTRACTOR FAN FOR BATH-ROOMS" of those formed with a front lid (13) in which is provided a window (12) which outer face is provided with flaps (13), occupying said front lid (13) the outer face of a support (14) of a noticeably quadrangular configuration, which rear face extends as per a discharge tube (14.1), being fitted the support (14) to its installation place by the corresponding screws (17) entering the holes (16) provided at the corners (15) of the support (14), incorporating said support (14) means for attaching an electric motor (19) which is supported at its central portion with the help of screws (32), being attached to the electric motor (19) shaft the corresponding fan (20) having paddles (21) and a diffuser (25), having the corresponding direction paddles (27), characterized in that in the lower portion of the corners (15) and annexed to one of its lower corners is incorporated in a centralized way an electronic circuit board (22) protected by means of a protector (23) in which a sight (24) is provided which perimeter is coincident with the hole provided (38) at the front lid (13), being also provided in said support (14) the attachment means of the extractor fan (10) to a vertical face as well as incorporating to the fan (20) the means for the regulation of the flow

generated because of the movement of the fan (20) and incorporating the covering means of the opening of the discharge tube (14.1).

2. "IMPROVEMENTS INTRODUCED IN THE ULTRA-COMPACT EXTRACTOR FAN FOR BATH-ROOMS" as per the 1st. Claim characterized in that the means for securing the extractor fan (10) to the vertical face and to the opening provided in same for its installation are formed by hooks (18) attached by its central zone or spring (18.2) to a cylindric pin (35) provided at the central portion of the support (14). 5 10
3. "IMPROVEMENTS INTRODUCED IN THE ULTRA-COMPACT EXTRACTOR FAN FOR BATH-ROOMS" as per the 1st. Claim characterized in that the distribution of the paddles (21) of the fan (20) is totally asymmetrical. 15 20
4. "IMPROVEMENTS INTRODUCED IN THE ULTRA-COMPACT EXTRACTOR FAN FOR BATH-ROOMS" as per the above Claims characterized in that the hooks (18) is formed with a properly named retention portion (18.1) in the shape of an U which extends as per a cylindric spring (18.2) wick extends as per its only hook in the shape of a four (18.3). 25 30
5. "IMPROVEMENTS INTRODUCED IN THE ULTRA-COMPACT EXTRACTOR FAN FOR BATH-ROOMS" as per the 1st. Claim characterized in that the cover means for the discharge tube (14.1) are formed with a shutter (29) which shows a noticeably circular configuration, being manufactured with a flexible material such as a plastic or the like, being incorporated to the diffuser (25) with the help of a hinge (30) which is fitted in the diametral plane of the diffuser (25) and being found at the shutter (29) in the notches (29.1) in a diametral situation. 35 40
6. "IMPROVEMENTS INTRODUCED IN THE ULTRA-COMPACT EXTRACTOR FAN FOR BATH-ROOMS" as per the above Claims characterized in that in the working position the hooks (18) press by one of its ends (18.1) on the interior face of the opening provided at the wall where the extractor fan is installed, whilst there is pressed itself by the end opposed to the hook (18.3) immobilized with the help of the fringe (36) provided in the support (14) and lodged into the channels (34). 45 50
7. "IMPROVEMENTS INTRODUCED IN THE ULTRA-COMPACT EXTRACTOR FAN FOR BATH-ROOMS" as per the 1st. Claim characterized in that the electronic circuit board (22) is connected by means of the wire (33) to the connector (31). 55

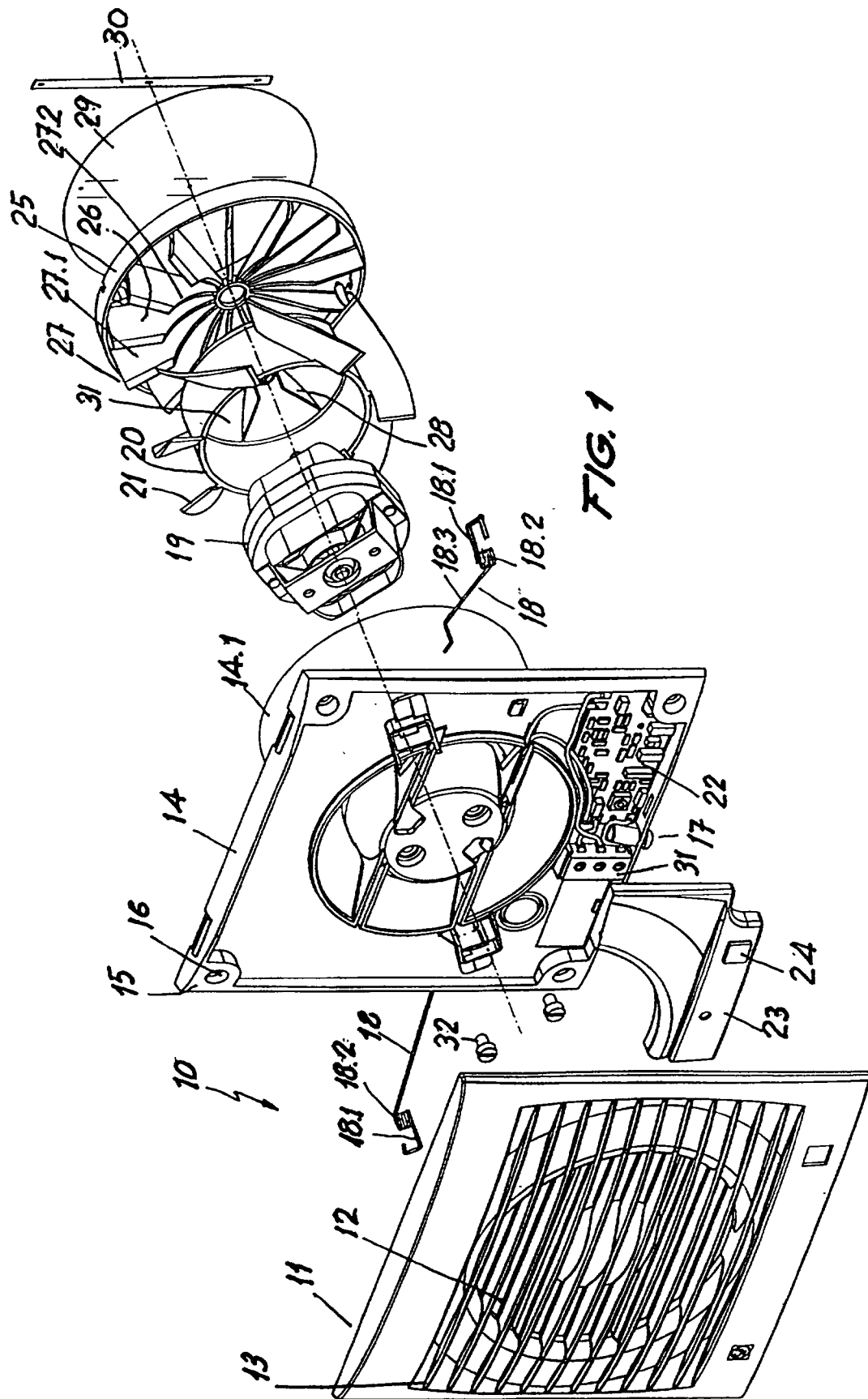
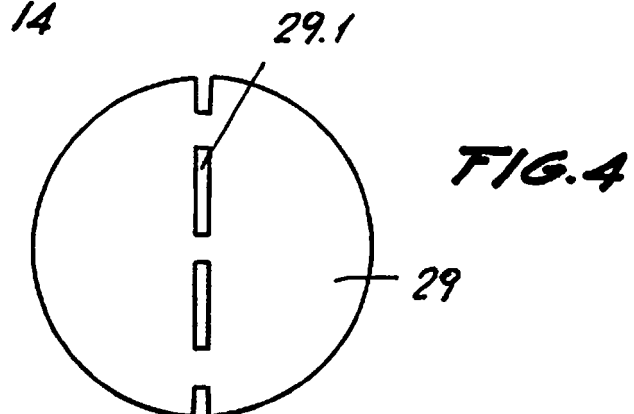
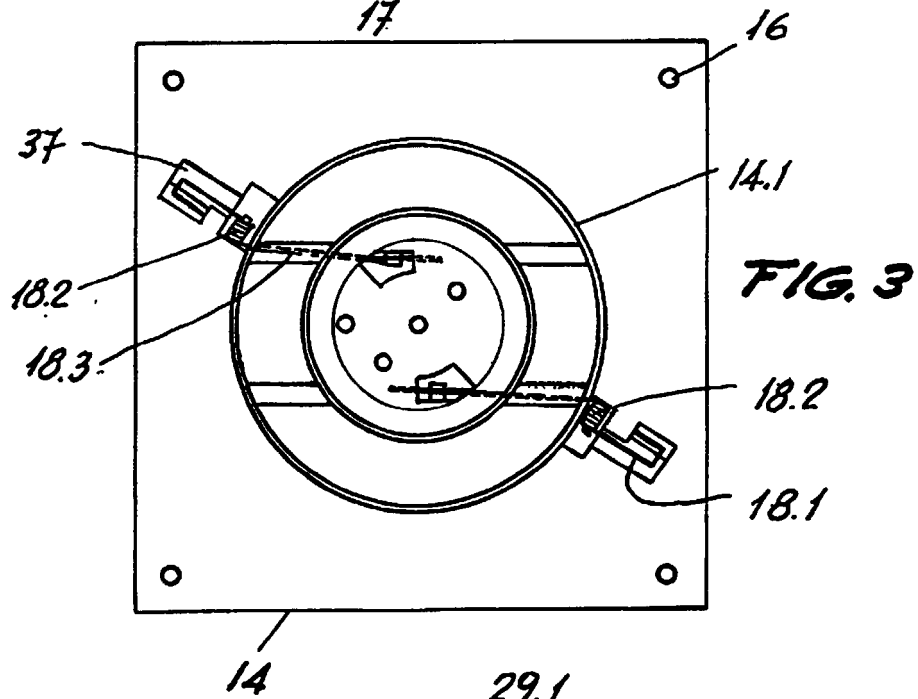
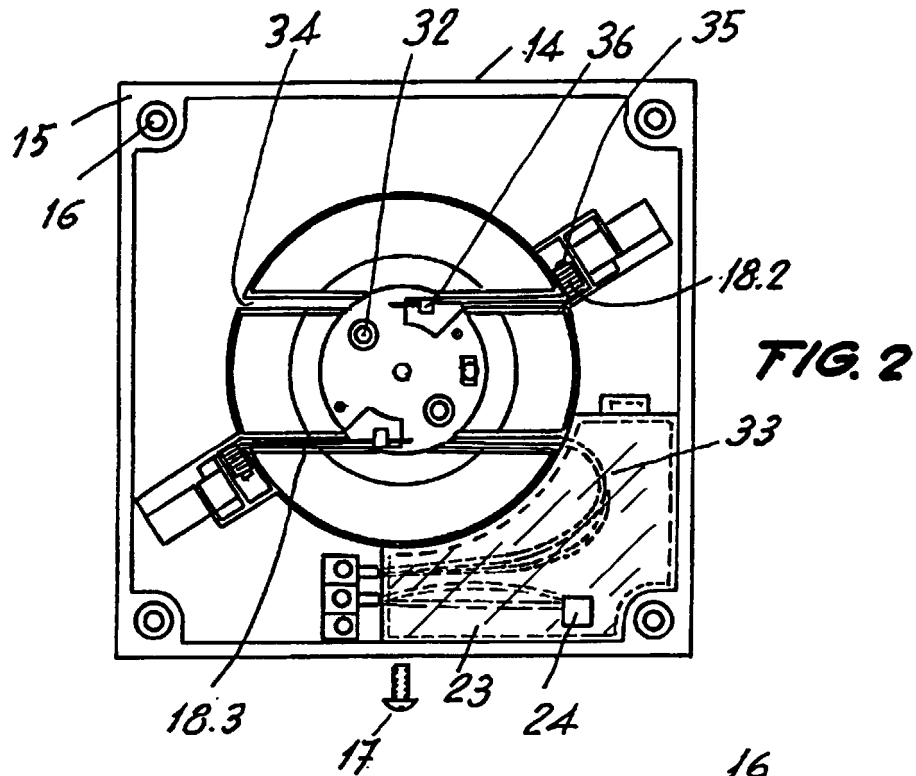


FIG. 1



INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES 99/00158

A. CLASSIFICATION OF SUBJECT MATTER		
IPC 6 : F04D25/12 ; F04D29/64		
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 : F04D ; F24F		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
ES		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
CIBEPAT, EPODOC, WPI, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	ES 1 038 510 U (ELECTROMECHANICA CATA) 01 July 1998 (01.07.98), the whole document	1, 3, 5-7
A	EP 0 242 342 A1 (PAX E.P.) 21 October 1987 (21.10.87), page 2 line 29 – page 6 line 19, figures 1,2*	1, 3, 7
A	ES 2 026 375 A (SOLER Y PALAU) 16 April 1992 (16.04.92), the whole document	1,5
A	US 5 050 831 A (JOYAL) 24 September 1991 (24.09.91), column 4, line 35 – column 5, line 11, figures 6 and 7	2, 4, 6
A	GB 2 079 372 A (T. SHYBAURA DENKI) 20 January 1981 (20.01.81)	
<input type="checkbox"/> Further documents are listed in the continuation of box C. <input type="checkbox"/> Patent family members are listed in annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 26 July 1999 (26.07.99)		Date of mailing of the international search report 30 July 1999 (30.07.99)
Name and mailing address of the ISA/ RU		Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/ES 99/00158

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