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(54) **BODY DRYER DEVICE**

(57) A waterproof body dryer device (10) which is installable either inside or outside a shower stall or bathtub for drying a user's body and hair, comprising a dispenser body (16) provided with a plurality of dispensing or blowing means (18) for discharging an airflow adapted to hit the user's body, and actuating means of said dispenser body (16) for dynamically drying the user's body.

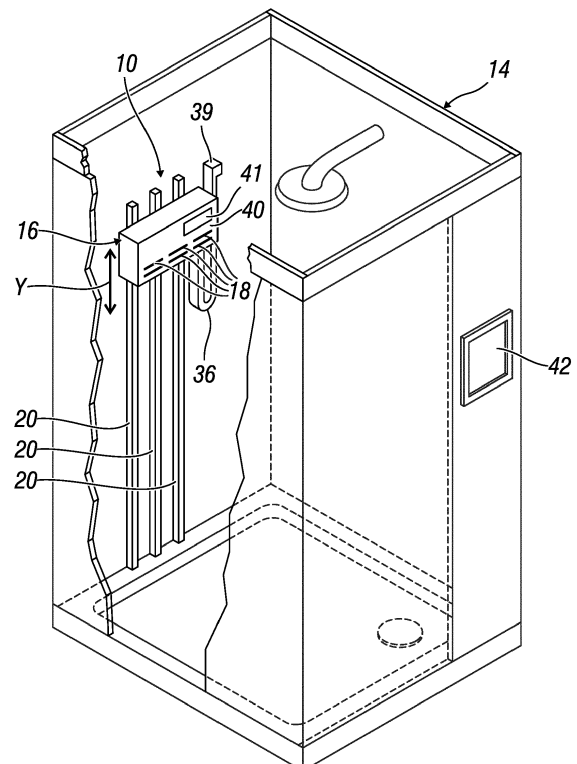


Fig. 1

Description

[0001] The present invention relates to a body dryer device.

[0002] More in particular, the present invention relates to a body dryer device, and even more in particular, to a drying device to be installed inside a shower stall or bathtub or outside and close thereto for drying a person's body and hair.

[0003] It is known that a person who uses a shower to wash his/her body and hair dries his/her body and hair by means of uses a towel and/or bathrobe when the washing has finished. However, the towel or bathrobe tends to get wet due to the drying operation and fills with bacteria which, if the towel is not washed and sanitized, tend to proliferate on the fabric with the risk of causing erythema or similar skin problems for the person, in addition to bad odor and/or the feeling of lack of freshness.

[0004] Another drawback is that drying means, such as towels or bathrobes, especially in case of facilities such as hotels or gyms or the like, often tend to become rough upon washing (typically with non-softened water) and due to the low-quality of the fabric, and therefore tend to be poorly absorbent as well as feeling scratchy in contact with the skin.

[0005] A further drawback related to the use of towels and/or a bathrobe is that they do not always allow complete drying because of the fabric of the towel (in fact the drying is related to the absorbent capacities of the fabric) or because not all areas of the body are reached (e.g., the middle of the back or the shoulders), with such an incomplete drying which does not facilitate putting on underwear or other clothing.

[0006] A further drawback related to the use of towels is found in case of care to elderly, disabled, or motor-impaired people, where caregivers need to spend a not negligible amount of time in drying operations with all the problems related to the conditions of the cared persons.

[0007] Solutions have been developed in order to overcome these problems, which allow drying in a completely natural manner and by means of warm air jets which hit the person's body. Some known air drying devices are defined by platforms (similar to weighing scales) on which the person steps and that emit a warm air jet from below, which hits the person's body thus drying it.

[0008] Other known types of body air drying devices are installed above the shower stall or bathtub and are capable of emitting an (either warm or cool) air jet which hits the person from above.

[0009] One such a solution is described in DE202007017873, which refers to a shower-dryer comprising a box-like body in which a fan and heating resistors are arranged; the position of said box-like body can be varied to adjust the height position of the drying means as a function of the warm air flow user's height.

[0010] Another known solution is described in EP0530726 and comprises a box-like body in which a fan is arranged, which generates an airflow exiting from

a grid to which a tube can be applied, the tube being capable of being gripped by a user and the height position of the boxed-like body being capable of being adjusted to adapt it to the user's height. A similar solution is described in US5438763, which comprises a box-like body in which the blowing and heating elements and nozzles for discharging the warm airflow are arranged, which is provided with a blowing tube capable of being gripped by a user and a system of pulleys for enabling the airflow through the tube excluding the airflow from the nozzles of the box-like body.

[0011] A further known solution of a body air drying device is defined by a "column-like" panel provided with dispensing nozzles which emit an air jet hitting the person positioned in front of said panel, as described in US2018/0064298.

[0012] However, the known solutions have some drawbacks related to the fact that such devices are arranged outside the shower stall thus requiring the person to leave the shower stall while dripping wet, implying the need for a preventive partial drying by means of a towel (falling into the drawbacks mentioned above) or with the drawback of making the floor of the bathroom or other dedicated space wet.

[0013] A further drawback of the air drying devices, in particular of the devices with a fixed jet coming from below or above, is related to the fact that they do not allow complete and uniform drying of the person's body.

[0014] It is the object of the present invention to obviate the drawbacks disclosed above.

[0015] More in particular, it is the object of the present invention to provide a body dryer device of the air type and adapted to allow complete drying of the person's entire body.

[0016] It is a further object of the present invention to provide a dryer device adapted to be installed inside a shower stall or at a bathtub or outside them.

[0017] It is a further object of the present invention to provide a dryer device adapted to allow a person's body to be dried uniformly, thoroughly, and quickly.

[0018] It is a further object of the present invention to provide a dryer device which may be used by elderly or disabled people.

[0019] It is a further object of the present invention to make available to users a dryer device adapted to ensure high efficiency and durability over time and moreover such as to be manufactured easily and cost-effectively.

[0020] These and other objects are achieved by the invention having the features outlined in claim 1.

[0021] According to the invention, a waterproof body dryer device is provided, which is installable either inside or outside a shower stall or bathtub for drying the user's body and hair, comprising a dispenser body provided with a plurality of dispensing or blowing means for discharging an airflow adapted to hit the user's body, and actuating means of said dispenser body for dynamically drying the user's body. Advantageous embodiments of the invention appear from the dependent claims.

[0022] The constructional and functional features of the body dryer device for a person according to the present invention may be better understood from the following detailed description in which reference is made to the accompanying drawings, which show a preferred and non-limiting embodiment thereof, and in which:

figure 1 diagrammatically shows a shower stall comprising the body dryer device of the present invention;

figure 2 shows a diagram of the constituent elements of the dryer device of the invention.

[0023] With reference to the aforementioned figures, the dryer device for a person's body, indicated by reference numeral 10 as a whole, is adapted to be installed inside a shower stall or compartment 14 and comprises a dispenser body 16 provided with a plurality of dispensing or blowing means 18 adapted to allow discharging an airflow generated by the components housed inside the dispenser body 16 and better described below, with said airflow (the temperature of which can be adjusted according to the user's specific needs, as better disclosed hereafter) which hits the person's body thus drying it.

[0024] According to alternative embodiments to the preferred embodiment shown in the figures, the device of the invention may be installed outside the shower stall or bathtub.

[0025] The dispensing or blowing means 18 can be defined by openings obtained in the dispenser body 16 having a slotted or circular or other suitable shape, or alternatively said dispensing or blowing means comprise fixed or adjustable nozzles which can externally project and which can have a round or flat blowing cone or can be defined by blowing bars.

[0026] The aforementioned dispensing or blowing means 18 can be arranged according to at least one horizontal line or can have a matrix-type distribution, or again can be arranged according to one or more curved lines (said last arrangement allows a better "envelopment" of the person's body); moreover, the dispensing or blowing means can have an arrangement and shape such as to combine both functional (airflow emission) and aesthetic features.

[0027] Furthermore, the dispenser body 16 is movable to be lowered/lifted (along a vertical direction indicated by arrow "Y" in figure 1) by means of (one or more) linear guides 20 vertically arranged and stabilized to a wall, for example of the roller or roll type or of the recirculating ball or rack type or other known type adapted for the purpose.

[0028] Inside the dispenser body 16, which is of the waterproof type, there are a turbine 22 actuated by means of a motor 24 and connected to the dispensing or blowing means 18, a heater unit 26 for transferring the heat to the air produced by the turbine 22 and conveyed to the dispensing or blowing means, a control unit 28

connected to the motor 24 and the heater assembly 26 which governs the operation of the components described as a function to the features required by the user who can adjust the air temperature and the power of the flow emitted by means of an input device 30 defined by a display or keypad 40 applied to the dispenser body 16 or a display or keypad 42 connected remotely thereto (for example, the input device 30 is applied to the shower stall 14 or close thereto, e.g., applied to a wall of the space) or the input device can consist of a remote control or a software application installed on a mobile phone or tablet or the like.

[0029] The power supply of the device of the invention is implemented by means of a 12-volt power supply connection 32, or alternatively it can be powered through the connection to the 230-volt central power supply network. The heater assembly 26 comprises heating resistors (the types of which may be different depending on the specific requirements) or can comprise a heat pump device. According to an alternative embodiment, the dispenser body 16 can comprise an accessory element defined by a shower head 34 connected to the dispenser body 16 by means of a tube 36 to the dispenser body 16, and more in particular to the turbine 22; said shower head 34 being used for drying the hair or parts of the body, such as armpits or the like as an alternative to that achieved by means of the dispenser body 16, or again can be used for drying infants or children.

[0030] The body dryer device of the present invention is installed/integrated into the shower stall body, but it can also be a kit which is installable in an already installed shower stall.

[0031] Furthermore, the dryer device, described here with particular reference to its installation in a shower stall, can also be installed or integrated into a bathtub or can be installed outside them.

[0032] In particular, if the dryer device of the invention is installed outside the shower stall or the bathtub, a panel opposed to the installation wall of the drying device will be provided with the function of defining an "obstacle" to the airflow emitted by the dispenser body; indeed, if the device is installed inside a shower stall, for example, the walls of such a shower stall will define an obstacle for the dispersion of the air exiting from the dispenser body which thus will remain more concentrated inside the stall and there will be no load dispersion thereof (in the absence of a wall or obstacle, the air (which is warm) will tend to flow towards the ceiling of the room, thus losing pressure).

[0033] The operation of the drying device of the present invention, described above with reference to the technical features and constituent components thereof, is explained below.

[0034] The user, once he/she has finished washing his/her body (by showering or bathing), can activate the dryer device 10 by means of an activation button 41 located on the dispenser body 16, with the dispenser body 16 moving downwards and upwards (by means of the

guides 20) and emits an airflow through the dispensing or blowing means 18 so as to dry the user's body and hair completely; furthermore, by means of the display or keypad 40, the user can activate only the operation of the accessory element defined by the shower head 34 so as to dry his/her hair and other parts of his/her body, as desired.

[0035] Moreover, the user will be able to adjust the temperature and power of the airflow exiting from the dispenser body or set an activation timing of the drying device by acting on the display or keypad 40 of the dispenser body 16, or again the user will also be able to set the downward/upward movement of the dispenser body 16 (intended as the number of upward/downward passes or vice versa).

[0036] Alternatively, and if said display or keypad is arranged outside the shower stall, e.g., if said display is of the external panel 42 or remote control or mobile phone application type, the user can decide to program the functions of the drying device (and decide on the airflow temperature, power, duration, etc.) in advance.

[0037] The advantages achieved by the body dryer device of the present invention are apparent from the foregoing description.

[0038] The body dryer device of the present invention advantageously allows drying one's body and hair by means of air with a laminar flow in a non-static but dynamic manner, because the body dryer is movable up and down and therefore is such as to dry the person's whole body with the elimination of body moisture; furthermore, the user can decide the number of passes of the drying device (in terms of upward and downward movements or vice versa) for complete and uniform drying.

[0039] A further advantage of the device of the invention is that it can also be installed directly in the shower stall or bathtub and therefore it does not require the user to have to leave the shower stall or bathtub, thus avoiding problems of water on the floor of the bathroom.

[0040] A further advantage of the dryer device of the invention is that it can be an accessory component or kit or a fully integrated device of a dedicated shower stall or can be installed in pre-existing shower stalls or bathtubs or outside them.

[0041] It is further advantageous that the drying device of the invention, if installed either inside a shower stall or outside (by virtue of the use of an obstacle or counter-wall) allows avoiding a pressure drop of the air emitted by the dispenser body, thus allowing a greater drying efficiency and speed.

[0042] A further advantage of the device of the invention is that it allows easy adjustment of the drying parameters (air temperature, airflow power, timing, and the like).

[0043] It is further advantageous that the dryer device of the invention is easy to use even by elderly, not self-sufficient or disabled persons, who can dry themselves being unassisted (by standing up and/or holding on to a support of the handle type or the like) without using towels

(because the dryer device can be adjusted to perform multiple up-and-down passes to achieve a complete drying), and without the need for assistance (which could be limited to the activation or programming of the dryer device or to a quick drying with a traditional towel).

[0044] A further advantage of the dryer device of the invention is that the airflow emitted by the dispenser body, being under pressure, results in a "massaging effect" on the user's body.

[0045] Although the invention has been described above with particular reference to a preferred, non-limiting embodiment thereof, several modifications and variations will become apparent to those skilled in the art in light of the above description. Therefore, the present invention aims at encompassing all modifications and variations falling within the scope of the following claims.

Claims

1. A waterproof body dryer device (10) which is installable either inside or outside a shower stall or bathtub for drying the user's body and hair, and **characterized in that** it comprises a dispenser body (16) provided with a plurality of dispensing or blowing means (18) for discharging an airflow adapted to hit the user's body, and actuating means of said dispenser body (16) for dynamically drying the user's body comprising at least one linear guide (20) vertically arranged and applied to a wall for moving said dispenser body (16) up and down.
2. A device according to claim 1, **characterized in that** the dispensing or blowing means (18) of the dispenser body (16) comprise a plurality of openings formed on the surface of said dispenser body, said openings having a slotted, circular/wavy, or similar shape.
3. A device according to claim 1, **characterized in that** the dispensing or blowing means (18) of the dispenser body (16) comprise fixed or adjustable nozzles having a round or flat blowing cone.
4. A device according to claim 1, **characterized in that** the dispensing or blowing means (18) of the dispenser body (16) comprise blowing bars.
5. A device according to one or more of the preceding claims, **characterized in that** the dispensing or blowing means (18) are arranged according to at least one horizontal line or may have a matrix-type distribution or, again, may be arranged according to one or more curved lines.
6. A device according to one or more of the preceding claims, **characterized in that** the dispenser body (16) comprises a turbine or blower (22) driven by a motor (24) and connected to the dispensing or blow-

ing means (18), a heater unit (26) for transferring heat to the air produced by the turbine (22), a control unit (28) connected to the motor (24) and the heater unit (26), adapted to adjust and manage the operation of said turbine or blower, motor, and heater assembly, and activating means (41) for the operation of the dispenser body (16). 5

7. A device according to one or more of the preceding claims, **characterized in that** it comprises an input device (30) defined by a display or keypad (40) applied to the dispenser body (16) or a display or keypad (42) remotely connected to said dispenser body. 10

8. A device according to one or more of the preceding claims, **characterized in that** it comprises an accessory element comprising a shower head (34) connected to the dispenser body (16) by means of a tube (36) for emitting an alternative airflow to that of the dispensing or blowing means (18) of the dispenser body (16). 15 20

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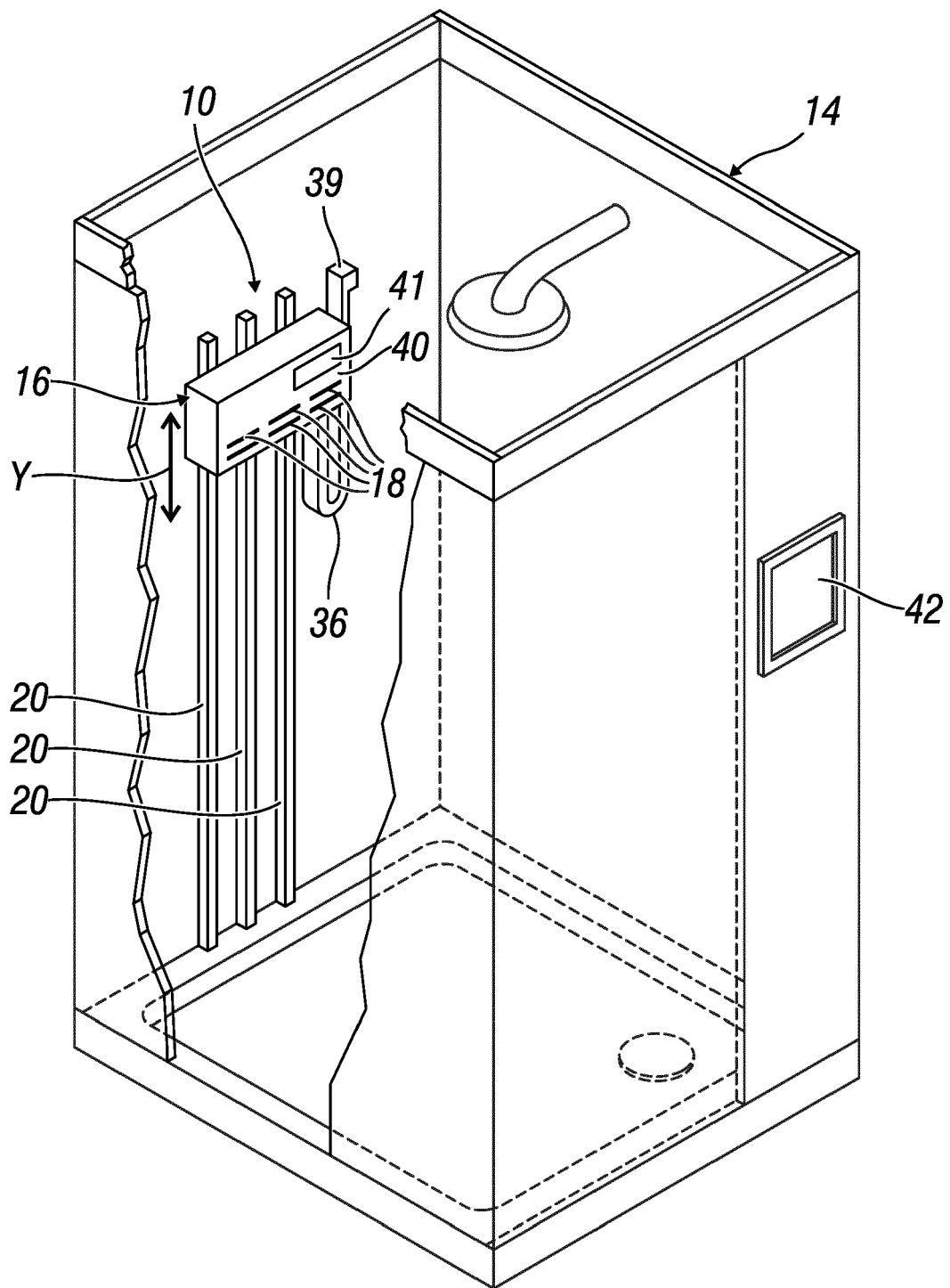


Fig. 1

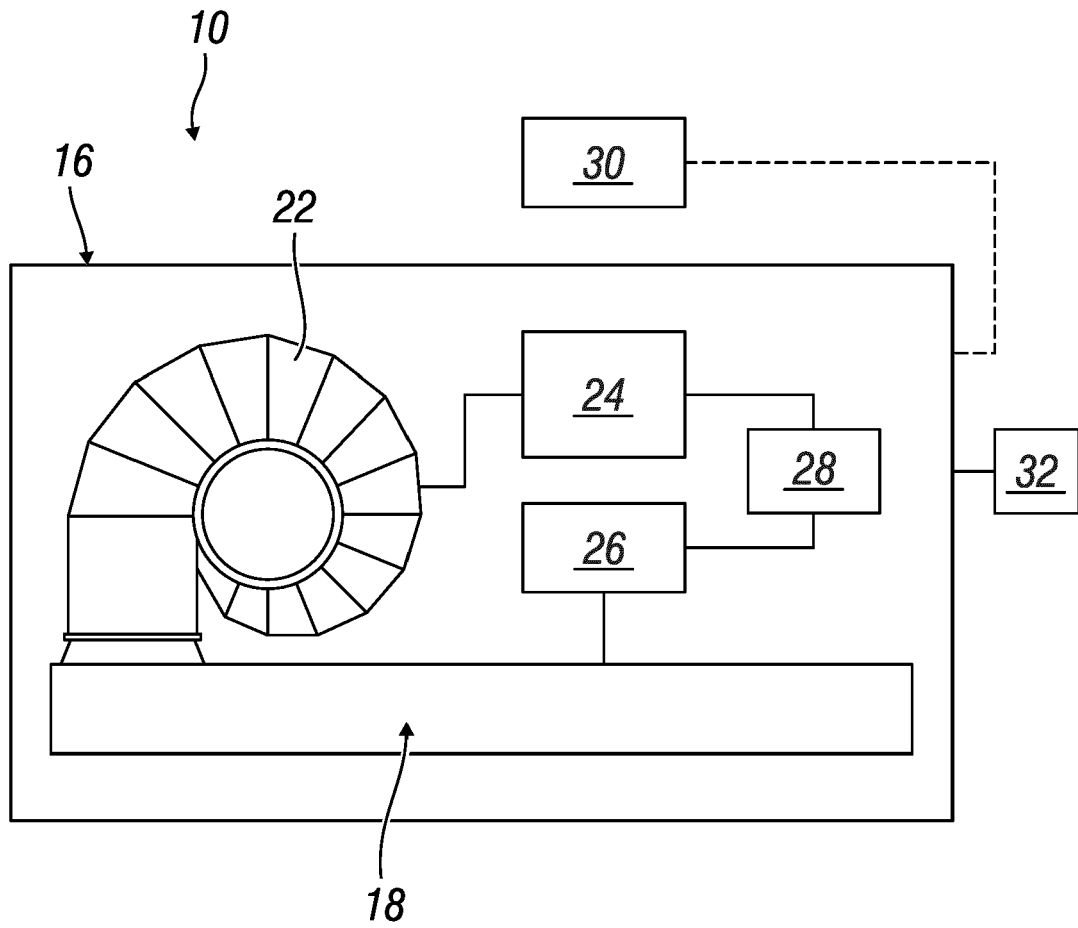


Fig. 2



EUROPEAN SEARCH REPORT

Application Number

EP 21 21 7817

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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			TECHNICAL FIELDS SEARCHED (IPC)
			A47K A45D
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		11 May 2022	Van Bost, Sonia
CATEGORY OF CITED DOCUMENTS		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	
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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 21 21 7817

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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11-05-2022

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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15	EP 0530726 A1	10-03-1993	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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