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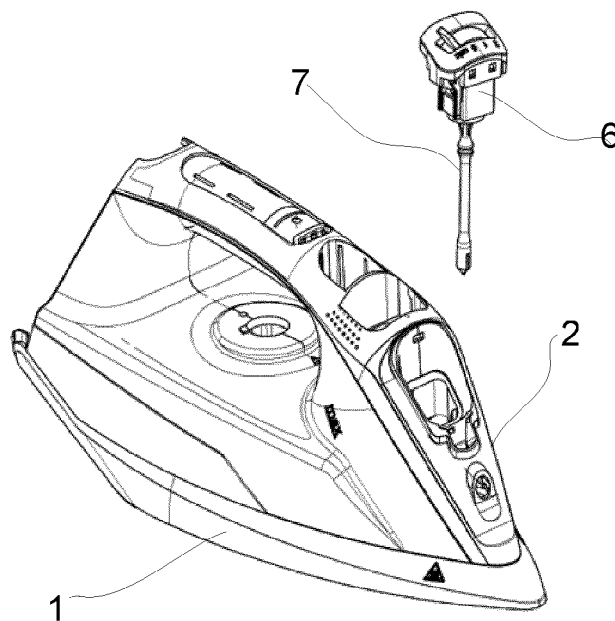
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(54) **STEAM IRON**

(57) Steam iron (1) having an iron body (2), a water tank (3), and a steam chamber (4) connected with the water tank (3), the steam chamber (4) being provided with a water opening (5); the iron body (2) is provided thereon with a water quantity adjusting device (6) that controls flowing from the water opening (5) to the steam chamber (4); the water quantity adjusting device (6) includes a valve rod (7) and a toggle (8) provided with a

handle (9) and a groove (80) matching a top end of the valve rod (7), whereby as soon as the handle (9) rotates to a different position, the toggle (8) moves the valve rod (7) to a different horizontal position along an axial direction of the valve rod (7) by contacting a tray (72) on the valve rod (7), and adjusts water flow at the water opening (5) by controlling the size of a gap between the valve rod (7) and the water opening (5).

**FIG. 1****EP 3 219 846 A1**

Description

Technical Field

[0001] This utility model relates to the field of household appliances, and specifically, to a steam iron.

Related Art

[0002] Steam irons have become one of commonly used household appliances. Steam can be jetted out from an ironing board of an electrical steam iron, and is used to humidify ironed clothes, to prevent the clothes from being damaged due to overheat. In the prior art, an electrical steam iron includes a water tank and a steam chamber; the steam chamber is formed above an ironing board; and after flowing into the steam chamber, water in the water tank is heated by the ironing board and evaporates into steam that jets from a jetting hole of the ironing board. Steam jetting amount generally can be adjusted. Amount of water flowing from the water tank to the steam chamber is controlled, so as to control amount of generated steam. "Close", "large", and "small" gears may be set according to requirements, and controlled by using a water quantity adjusting device, such as a knob or a toggle, to achieve control of steam amount.

[0003] After the steam iron is used for a long time, some dirt deposits in the steam chamber, such as a calcium compound, and therefore the steam chamber needs to be cleaned. Generally, the steam chamber is washed by using relatively large water flow in the water tank. In the prior art, generally, a cleaning function is controlled by using an independent button.

[0004] However, steam control and cleaning control are respectively achieved by using two systems that are independent from each other, and consequently, a structure of an electrical iron becomes complex, and production costs increase; and operation complexity also increases because the two systems need to be operated separately.

[0005] Currently, effective solutions have not been proposed to solve problems, such as complex structures, high costs, and inconvenient operation that are caused by independence of a steam control device from a cleaning device, of steam irons in the prior art.

SUMMARY

[0006] This utility model provides a steam iron, to solve at least problems, such as complex structures, high costs, and inconvenient operation that are caused by independence of a steam control device from a cleaning device, of steam irons in the prior art.

[0007] To solve the foregoing problems, one aspect of this utility model provides a steam iron, having an iron body, a water tank, and a steam chamber connected with the water tank, the steam chamber being provided thereon with a water opening; the iron body being provided

thereon with a water quantity adjusting device that controls flowing from the water opening to the steam chamber, where the water quantity adjusting device includes a valve rod and a toggle; the toggle is provided with a handle and a groove matching a top end of the valve rod; and when the handle rotates to a different position, the toggle moves the valve rod to the different position along an axial direction of the valve rod by contacting a tray on the valve rod, and adjusts water flow at the water opening by controlling a size of a gap between the valve rod and the water opening. The valve rod is controlled to move up and down by toggling the handle on the water quantity adjusting device, so that the size of the gap between the valve rod and the water opening changes accordingly, thereby changing a size of water flow from the water tank to the steam chamber, for example, achieving switch among a no-steam mode, a small-steam amount mode, a large-steam amount mode, and a large-water amount mode.

[0008] Preferably, a tail end of the valve rod is provided with a side notch configured to control the water flow. Water flow control is achieved by coordination between the side notch provided on the tail end of the valve rod and working gears of the toggle.

[0009] Preferably, when the handle is in a first position, the valve rod closes the water opening; when the handle is in a second position, a gap between the valve rod and the water opening is partially opened; and when the handle is in a third position, the gap between the valve rod and the water opening is completely opened, where the second position and the third position are located on two sides of the first position respectively. As stated above, when the foregoing handle is in the second position, the gap between the valve rod and the water opening is partially opened, and water in the water tank can enter the steam chamber, to achieve adjustment of steam amount. When the handle is in the third position, the gap between the valve rod and the water opening is completely opened, and water in the water tank can rapidly enter the steam chamber, to achieve an objective of cleaning the steam chamber. The second position and the third position are located on two sides of the first position respectively, and in this way, when adjusting a steam gear, a user will not mistakenly enable a calcium-removing function.

[0010] Preferably, a side of the groove is provided thereon with at least three pairs of gear projections in contact with the tray on the valve rod; when the handle is in the first position, the first pair of gear projections contacts the tray; when the handle is in the second position, the second pair of gear projections contacts the tray; and when the handle is in the third position, the third pair of gear projections contacts the tray; where the second pair of gear projections and the third pair of gear projections are located on two sides of the first pair of gear projections respectively.

[0011] Preferably, the water quantity adjusting device is detachably installed on the iron body.

[0012] Preferably, the water quantity adjusting device includes a top cover and a bracket connected with the top cover; and the toggle is installed on the bracket through a wheel shaft, and the handle extends out from an opening of the top cover and rotates within a range of the opening of the top cover.

[0013] Preferably, the first position of the handle is disposed in the middle of the opening of the top cover; and the second position and the third position of the handle are disposed on two sides of the opening of the top cover respectively.

[0014] Preferably, the valve rod passes through an opening of the bracket, and a spring is disposed between the tray and the opening.

[0015] Preferably, the bracket is provided thereon with a buckle matching the iron body, where when the handle is in the third position, a fixing block on the toggle presses the buckle inwards to achieve separation of the water quantity adjusting device from the iron body.

[0016] Preferably, the water quantity adjusting device is externally sleeved with an elastic device.

[0017] By means of this utility model, problems, such as complex structures, high costs, and inconvenient operation that are caused by independence of a steam control device from a cleaning device, of steam irons in the prior art are solved, and steam adjustment and cleaning functions are achieved by using a set of system, which has a simple structure and low costs, and at the same time, the system facilitates convenient and simple operation by a user, and is less error-prone.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] The accompanying drawings described herein are used to provide further understanding of this utility model, and constitute a part of this application. Schematic embodiments of this utility model and descriptions thereof are intended to explain this utility model, and do not constitute an inappropriate limitation to this utility model. In the drawings:

- FIG. 1 is a schematic diagram of a steam iron;
- FIG. 2 is a schematic sectional view of a steam iron;
- FIG. 3 is a schematic diagram (1) of a water quantity adjusting device;
- FIG. 4 is a schematic diagram (2) of a water quantity adjusting device; and
- FIG. 5 is a schematic diagram (3) of a water quantity adjusting device.

DETAILED DESCRIPTION

[0019] The following describes this utility model with reference to the accompanying drawings and embodiments. It should be noted that, when there is no conflict, the embodiments in this application and characteristics in the embodiments may be combined with each other.

[0020] This utility model provides a steam iron. FIG. 1

is a schematic diagram of the steam iron.

[0021] FIG. 2 is a schematic sectional view of the steam iron. As shown in FIG. 1 and FIG. 2: the steam iron 1 has an iron body 2, a water tank 3, and a steam chamber 4 connected with the water tank 3, the steam chamber 4 is provided thereon with a water opening 5, and the iron body 2 is provided thereon with a water quantity adjusting device 6 that controls flowing from the water opening 5 to the steam chamber 4, where the water quantity adjusting device 6 is detachably installed on the iron body 2; and the water quantity adjusting device 6 includes a valve rod 7 and a toggle 8; the toggle 8 is provided with a handle 9 and a groove 80 matching a top end 71 of the valve rod 7; when the handle 9 rotates to a different position, the toggle 8 moves the valve rod 7 to a different horizontal position along an axial direction of the valve rod 7 by contacting a tray 72 on the valve rod 7, and adjusts water flow at the water opening 5 by controlling a size of a gap between the valve rod 7 and the water opening 5.

[0022] Preferably, FIG. 3 is a schematic diagram (1) of a water quantity adjusting device. As shown in FIG. 3, a tail end 73 of the valve rod is provided with a side notch 74 configured to control the water flow. Water flow control can be achieved by coordination between the side notch 74 provided on the tail end 73 of the valve rod and working gears of the toggle 8. In the prior art, multiple solutions of coordination between the valve rod and the water opening are provided, and details are not described herein again.

[0023] Specifically, the valve rod 7 is controlled to move up and down by toggling the handle 9 on the water quantity adjusting device 6, so that the size of the gap between the valve rod 7 and the water opening 5 changes accordingly, thereby changing a size of water flow from the water tank 3 to the steam chamber 4, for example, achieving switch among a no-steam mode, a small-steam amount mode, a large-steam amount mode, and a large-water amount mode.

[0024] Preferably, FIG. 4 is a schematic diagram (2) of a water quantity adjusting device, and FIG. 5 is a schematic diagram (3) of a water quantity adjusting device. As shown in FIG. 4 and FIG. 5, the foregoing water quantity adjusting device 6 further includes a top cover 10 and a bracket 11 connected with the top cover 10; the toggle 8 is installed on the bracket 11 through a wheel shaft 84, and the handle 9 extends out from an opening 100 of the top cover 10 and rotates within a range of the opening 100 of the top cover. The valve rod 7 passes through an opening 12 of the bracket 11; and a spring 13 is disposed between the tray 72 and the opening 12, and is configured to buffer and tightly press the tray 72. A gear label is carved on the opening of the top cover. A "0" gear represents that the opening is closed, a "1" gear represents small water amount, a "2" gear represents large water amount, and a "calc" gear represents calcium-removing water amount.

[0025] As stated above, when the handle 9 is in a first

position P1 (that is, on the "0" gear), the valve rod 7 closes the water opening 5. When the handle 9 is in a second position P2 (that is, on the "1" gear or the "2" gear, multiple steam gears may also be designed according to user requirements), a gap between the valve rod 7 and the water opening 5 is partially opened, and water in the water tank 3 can enter the steam chamber 4, so as to achieve steam amount adjustment. When the handle 9 is in a third position P3 (that is, on the "calc" gear), the gap between the valve rod 7 and the water opening 5 is completely opened, and water in the water tank 3 can rapidly enter the steam chamber 4, to achieve an objective of cleaning the steam chamber 4. The foregoing second position P2 and third position P3 are located on two sides of the first position P1 respectively, and in this way, when adjusting a steam gear, a user will not mistakenly enable a calcium-removing function.

[0026] Specifically, when the first position P1 of the foregoing handle 9 is disposed in the middle of the opening 100 of the top cover 10 (that is, a position of the "0" gear); and the second position P2 and the third position P3 of the handle 9 are disposed on two sides of the opening 100 of the cover top respectively.

[0027] Preferably, as shown in FIG. 4, a side of the groove 80 is provided with at least three pairs of gear projections (81, 82, 83) in contact with the tray 72 on the valve rod 7; when the handle 7 is in the first position P1 (that is, on the "0" gear), the first pair of gear projections (81a, 81b) contacts the tray 72; when the handle is in the second position P2 (that is, on the "1" gear or the "2" gear, multiple steam gears may also be designed according to user requirements), the second pair of gear projections (82a, 82b) contacts the tray 72; when the handle is in the third position P3 (that is, on the "calc" gear), the third pair of gear projections (83a, 83b) contacts the tray 72; and the second pair of gear projections (82a, 82b) and the third pair of gear projections (83a, 83b) are located on two sides of the first pair of gear projections (81a, 81b) respectively.

[0028] Preferably, as shown in FIG. 3, a bracket 10 is provided thereon with a buckle 14 matching the iron body 2; when the handle 9 is in the third position P3, a fixing block 85 on the toggle 8 presses the buckle 14 inwards to achieve separation of the water quantity adjusting device 6 from the iron body 2.

[0029] Preferably, as shown in FIG. 5, the water quantity adjusting device 6 is externally sleeved with an elastic device 15. Specifically, a middle part of the valve rod 7 may be externally sleeved with a spring 15 matching the iron body 2. After the foregoing buckle 14 separates from the iron body 2, the water quantity adjusting device 6 automatically pops out under an action of the spring 15, and a user can perform more thorough cleaning operation.

[0030] By means of this utility model, problems, such as complex structures, high costs, and inconvenient operation that are caused by independence of a steam control device from a cleaning device, of steam irons in the

prior art are solved, and steam adjustment and cleaning functions are achieved by using a set of system, which has a simple structure and low costs, and at the same time, the system facilitates convenient and simple operation by a user, and is less error-prone.

[0031] Various specific embodiments described in the foregoing and shown in accompanying drawings are only used for illustrating this utility model, and are not entirety of this utility model. Within the scope of the basic technical thought of this utility model, any types of modifications for this utility model made by persons ordinarily skilled in the art fall within the scope of this utility model.

15 Claims

1. A steam iron (1), having an iron body (2), a water tank (3), and a steam chamber (4) connected with the water tank (3), the steam chamber (4) being provided thereon with a water opening (5), and the iron body (2) being provided thereon with a water quantity adjusting device (6) that controls flowing from the water opening (5) to the steam chamber (4), **characterized in that**, the water quantity adjusting device (6) comprises a valve rod (7) and a toggle (8); and the toggle (8) is provided with a handle (9) and a groove matching a top end (71) of the valve rod; wherein, when the handle (9) rotates to a different position, the toggle (8) moves the valve rod (7) to the different position along an axial direction of the valve rod by contacting a tray (72) on the valve rod (7), and adjusts water flow at the water opening (5) by controlling the size of a gap between the valve rod (7) and the water opening (5).
2. The steam iron according to claim 1, **characterized in that**, a tail end (73) of the valve rod (7) is provided with a side notch (74) configured to control the water flow.
3. The steam iron according to claim 1, **characterized in that**, when the handle (9) is in a first position, the valve rod (7) closes the water opening (5); when the handle (9) is in a second position, the gap between the valve rod (7) and the water opening (5) is partially opened; and when the handle (9) is in a third position, the gap between the valve rod (7) and the water opening (5) is completely opened; wherein the second position and the third position are located on two sides of the first position respectively.
4. The steam iron according to claim 3, **characterized in that**, a side of the groove (80) is provided thereon with at

least three pairs of gear projections (81, 82, 83) in contact with the tray (72) on the valve rod; and when the handle (9) is in the first position, the first pair of gear projections (81a, 81b) contacts the tray; when the handle (9) is in the second position, the second pair of gear projections (82a, 82b) contacts the tray; and when the handle (9) is in the third position, the third pair of gear projections (83a, 83b) contacts the tray; wherein the second pair of gear projections (82a, 82b) and the third pair of gear projections (83a, 83b) are located on two sides of the first pair of gear projections (81a, 81b) respectively.

5. The steam iron according to claim 4, **characterized in that**,
the water quantity adjusting device (6) is detachably installed on the iron body (2). 5

6. The steam iron according to claim 5, **characterized in that**,
the water quantity adjusting device (6) comprises a top cover (10) and a bracket (11) connected with the top cover (10); and
the toggle (8) is installed on the bracket (11) through a wheel shaft (84), and the handle (9) extends out from an opening (100) of the top cover (10) and rotates within a range of the opening (100) of the top cover. 10
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7. The steam iron according to claim 6, **characterized in that**,
the first position of the handle (9) is disposed in the middle of the opening (100) of the top cover; and the second position and the third position of the handle (9) are disposed on two sides of the opening (100) of the top cover respectively. 35

8. The steam iron according to claim 6, **characterized in that**,
the valve rod (7) passes through an opening (12) of the bracket (11), and a spring (13) is disposed between the tray (72) and the opening (12). 40

9. The steam iron according to claim 8, **characterized in that**,
the bracket (10) is provided thereon with a buckle (14) matching the iron body (2); wherein, when the handle (9) is in the third position, a fixing block (85) on the toggle (8) presses the buckle (14) inwards to achieve separation of the water quantity adjusting device (6) from the iron body (2). 45
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10. The steam iron according to claim 9, **characterized in that**,
the water quantity adjusting device (6) is externally sleeved with an elastic device (15). 55

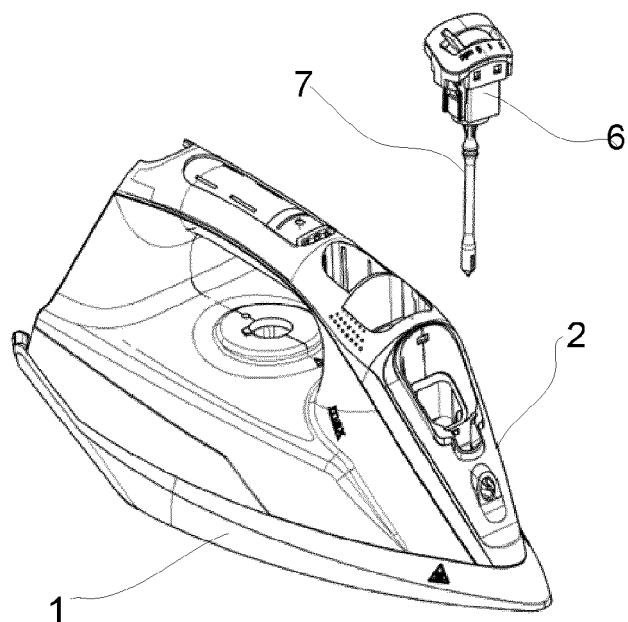


FIG. 1

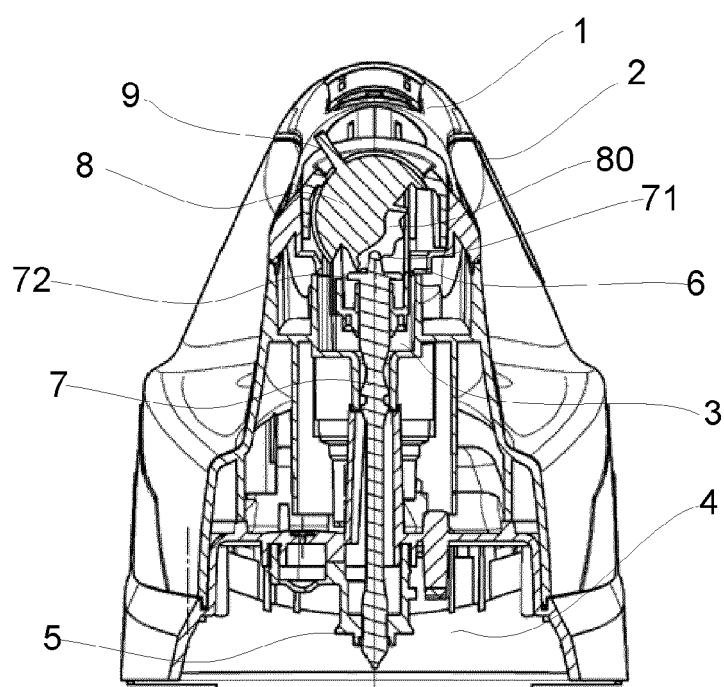


FIG. 2

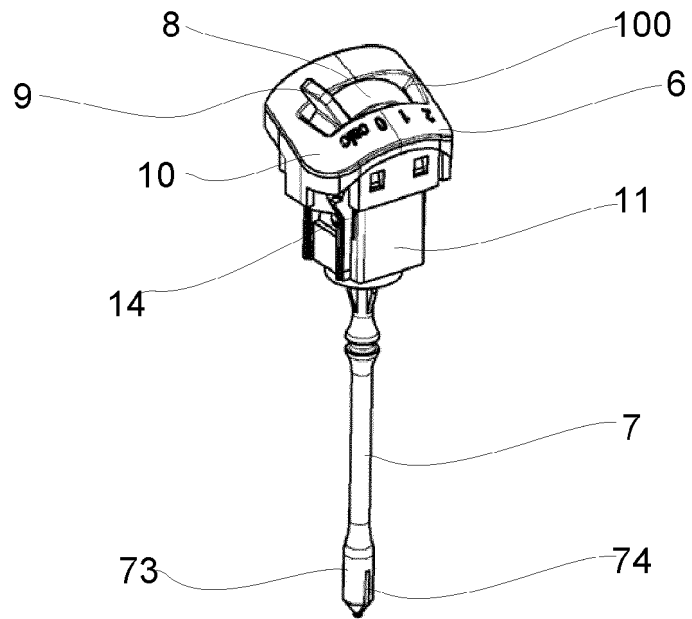


FIG. 3

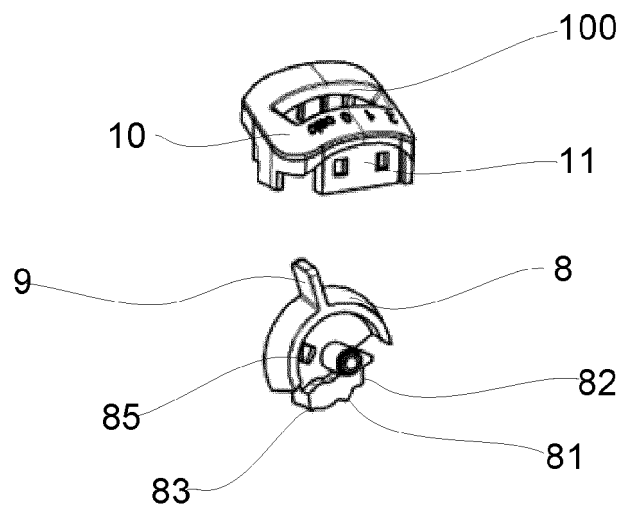


FIG. 4

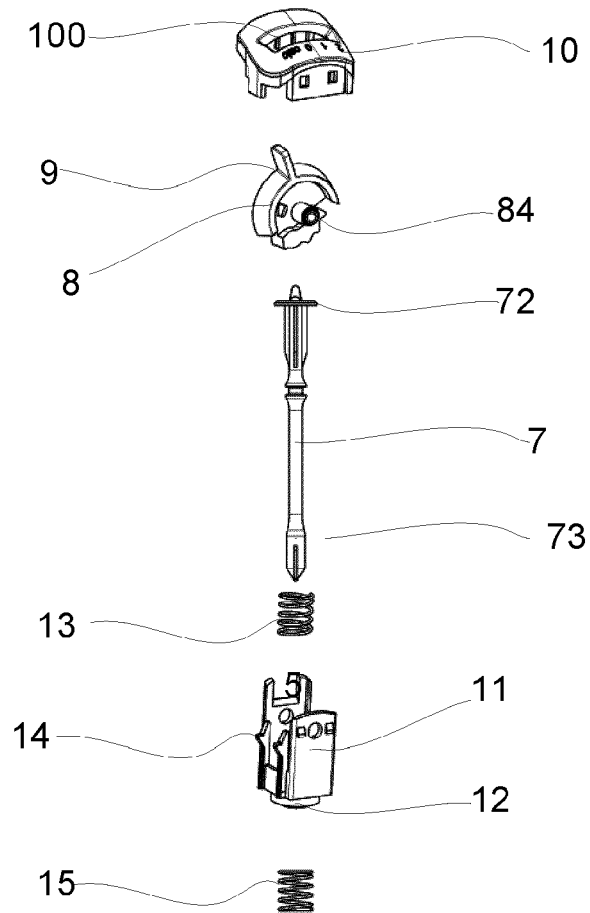


FIG. 5



EUROPEAN SEARCH REPORT

Application Number
EP 17 16 1370

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Place of search Munich		Date of completion of the search 14 July 2017	Examiner Clivio, Eugenio
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		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 & : member of the same patent family, corresponding document	

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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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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14-07-2017

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