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(54) **DEVICE FOR SANIFYING, CLEANING AND MAINTAINING A TOILET BOWL WITHOUT DIRECT CONTACT BETWEEN THE USER AND THE PRODUCT**

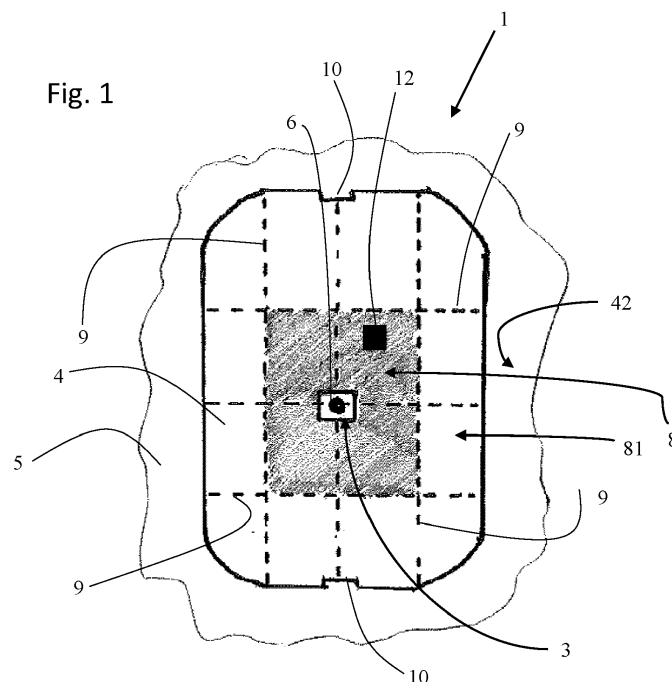
(57) A device (1) for sanitising, cleaning and providing maintenance to a WC, which is configured to be positioned on a bowl (2) of an open WC, said device (1) comprises:

- a release system (3) for releasing a sanitising composition (20) positionable as facing inside a WC bowl (1) and configured to eject the sanitising composition (20) inside the WC;
- a support portion (4), connected to the release system

(3) and surrounding the release system (3), configured to be laid on the bowl (2) of a WC;

- a sealing edge (5) connected in a continuous manner to the support portion (4) and surrounding the support portion (4), configured to adhere to an outer edge (21) of the bowl (2) for sealing it and insulating the inside of the bowl (2) from the outer environment; this device (1) is universal and can be used on any form or type of WC.

Fig. 1



Description

Technical field

[0001] The present invention relates to a device for sanifying, cleaning and maintaining a toilet bowl. The device according to the present invention is usefully employed for cleaning the toilet bowl of a bathroom for domestic use, but also of bathrooms intended to be used daily by a large number of people, such as for example bathrooms of public spaces, but also of private facilities.

Description of the prior art

[0002] Devices for sanifying, cleaning and maintaining a toilet bowl are known in the state of the art.

[0003] Among the known devices, some include a container containing a sanitising substance to allow a user to pour this sanitising substance into the WC bowl. Such containers have a spout suitable for reaching points of the inside of the bowl that are less visible. The sanitising substance, once poured, is allowed to act for a few minutes. In order to remain in contact with the WC walls for a useful time to ensure good effectiveness, the device provides using sanitising substances with a certain viscosity, such as gel products, which tend to flow more slowly on the walls inside the bowl.

[0004] The use of drain cleaning liquid or gel products for cleaning and maintaining the drain tubes and for de-clogging them is known in the state of the art.

Problem of the prior art

[0005] Disadvantageously, these products, since they act in direct contact with the user, comprise substances which are not very aggressive in order to avoid undesired reactions. Therefore, the substances that are used in the current state of the art are not very effective in cleaning or providing maintenance of the WC, requiring more consecutive applications or, in some cases, the direct intervention with rubbing on the part of the user, who thus comes into contact with potentially very dirty portions of the WC.

[0006] Disadvantageously, gel products, due to their viscosity, are more difficult to be distributed uniformly on the walls inside the WC bowl. Also, in this case, this problem can be solved by using a considerable quantity of product and various applications thereof in several successive steps, but causing undesired wastes and consequently greater pollution, or by direct intervention of the user.

[0007] Disadvantageously, all the sanitising, cleaning, descaling or drain cleaning substances of such devices, being directly handled by the user, require attention and specific care on the part of the user.

SUMMARY OF THE INVENTION

[0008] In this context, the task underlying the present invention is to propose a device for sanifying, cleaning and maintaining a toilet bowl that overcomes the drawbacks of the prior art mentioned above.

[0009] In particular, it is an object of the present invention to provide a device for sanifying, cleaning and maintaining a toilet bowl that is effective, limiting the risks to the user.

[0010] It is a further object of the present invention to provide a device for sanifying, cleaning and maintaining a toilet bowl that avoids waste and allows a lower production of waste.

[0011] It is a further object of the present invention to provide a device for sanifying, cleaning and maintaining a toilet bowl that is simple, safe, economical and easily applicable by a user.

[0012] The technical task specified and the objects specified are substantially achieved by a device for sanifying, cleaning and maintaining a toilet bowl comprising the technical features set forth in one or more of the appended claims.

Advantages of the invention

[0013] In particular, the device for sanifying, cleaning and maintaining a toilet bowl according to the present invention solves the technical problem in that, once applied to the bowl, it allows to isolate the internal environment of the bowl from that surrounding the WC.

[0014] Consequently, it is possible to use more aggressive substances that remain isolated inside the bowl, limiting the risks of the user to come into contact therewith and resulting more effective in sanifying, cleaning and maintaining a toilet bowl.

[0015] Thanks to the present invention it is also possible to reduce the amount of household waste and reject.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The characteristics and advantages of the present invention will become clear from the following detailed description of a possible practical embodiment, illustrated by way of non-limiting example in the set of drawings, wherein:

- Figure 1 shows a top view of the device according to the present invention;
- Figure 2 shows a side view of the device of Figure 1;
- Figure 3 shows the device of Figures 1 and 2 in a configuration of use.

DETAILED DESCRIPTION

[0017] Even when not explicitly highlighted, the individual features described with reference to the specific embodiments must be considered as accessories and/or

exchangeable with other features, described with reference to other embodiments.

[0018] With reference to the accompanying drawings, the present invention relates to a device 1 for sanitising, cleaning and maintaining a toilet bowl. This device 1 is configured to be positioned on a bowl 2 of an open WC, as shown for example in Figure 3.

[0019] The device 1 comprises a release system 3 for releasing a sanitising, cleaning or descaling composition 20. The release system 3 is positionable as facing inside a WC bowl 2. In particular, the release system 3 is configured to eject the sanitising, cleaning or descaling composition 20 inside the WC. The release system 3 is constituted, for example, by a container. The release system 3 is made of a material that is inert to the sanitising, cleaning or descaling composition 20. For example, the release system 3 is made of a polymeric material.

[0020] The sanitising, cleaning or descaling composition 20 is configured to react when it comes into contact with the water of the WC, by sanitising, cleaning or descaling the inside of the bowl 2.

[0021] The sanitising, cleaning or descaling composition 20 can be composed of surfactant and/or acid products, in powder or tablet form, or even in liquids and/or gels. This sanitising, cleaning or descaling composition 20 can be pre-inserted into the release system 3 at the time of purchase of the device 1, i.e., the device 1 can be supplied with the sanitising, cleaning or descaling composition 20 together with the release system 3. Alternatively, the sanitising, cleaning or descaling composition 20 can be contained in a suitable interchangeable cartridge to be applied to the release system 3 by the user in a step subsequent to the purchase of the device 1. According to this alternative, the device 1 can be supplied directly together with a quantity of sanitising, cleaning or descaling composition 20 suitable for a single use or for several uses. Or the sanitising, cleaning or descaling composition 20 can be sold separately from the device 1 so that the device 1 is reused several times, even with various types of sanitising, cleaning or descaling composition 20.

[0022] The device 1 comprises a support portion 4 connected to the release system 3 and surrounding the release system 3. This support portion 4 is configured to be laid on the bowl 2 of a WC. In particular, the support portion 4 is intended to be arranged on an axis of a WC or directly on the bowl 2. The support portion 4 is contiguous to the release system 3.

[0023] For example, the support portion 4 comprises an opening in which the release system 3 is interlocked and/or attached. It should be pointed out that, alternatively, the release system 3 can be made as one piece with the support portion 4.

[0024] The release system 3 may be arranged at the second surface 42 or be interposed between the first surface 41 and the second surface 42. Preferably, the release system 3 is arranged in the middle of the support portion 4.

[0025] The device 1 comprises a sealing edge 5, connected in a continuous manner to the support portion 4. In the context of the present description, "connected in a continuous manner" means that the sealing edge 5 is contiguous to the support portion 4. In other words, the sealing edge 5 and the support portion 4 are directly connected and are bordering. The sealing edge 5 surrounds the support portion 4.

[0026] The sealing edge 5 is configured to adhere to an outer edge 21 of the bowl 2 for sealing it and insulating the inside of the bowl 2 from the outer environment.

[0027] Preferably, the support portion 4 is rigid to provide structural support to the release system 3. Vice versa, the sealing edge 5 is preferably made of a flexible material so as to be adaptable to different WC bowls 2.

[0028] Preferably, the support portion 4 is made at least partly of paper. Even more preferably, the support portion 4 is made of cardboard or of another rigid material.

[0029] Preferably, the sealing edge 5 is made of a polymeric material, even more preferably cellophane. Advantageously, the sealing edge 5 can adhere effectively to the outer edges 21 of the bowl 2.

[0030] It should be noted that when the device 1 is arranged on a bowl 2 of a WC, the device 1 provides a covering of the inside of the WC bowl 2 so as to prevent any leakage of harmful liquids and/or vapours from the WC. In this respect, preferably, the support portion 4 comprises a safety valve 12 comprising a filter for filtering any harmful vapours accidentally formed inside the bowl 2 once the sanitising composition 20 has been released.

[0031] Advantageously, it is possible to isolate the environment inside the WC bowl 2 and therefore to also use more aggressive sanitising compositions which give rise, by coming into contact with the water, to the formation of chemical reactions that are contained inside the WC, without the user coming into contact therewith directly.

[0032] For example, it is thus possible to use as a sanitising, cleaning or descaling composition 20 also foaming products and/or drain cleaning products, which generally comprise strong acids or strong bases.

[0033] Preferably, the release system 3 has an openable area 7 positionable as facing inside the bowl 2 to allow the ejection of the sanitising, cleaning or descaling composition 20.

[0034] The device 1 comprises release means 6. The release means are actuatable to release the sanitising, cleaning or descaling composition 20 inside the bowl 2. The release means 6 comprise, for example, a button or a knob located at the surface 42, in order to avoid coming into contact with the sanitising, cleaning or descaling composition 20 acting inside the bowl 2.

[0035] The release means 6 are opposite to the openable area 7 so as to be actuatable by a user. This openable area 7 is, for example, a door that is unlocked by the release means 6 when a user actuates them.

[0036] The release system 3 comprises signalling means (not shown in the accompanying figures) config-

ured to signal to a user the successful sanitising, cleaning and maintenance completion. The signalling means are, for example, visual or sounds. Preferably, the signalling means are constituted by a LED lamp. For example, the LED lamp lights up for a predetermined time during the sanitising process, i.e., once the release means 6 have been actuated. After the predetermined time has elapsed, i.e., when the sanitising, cleaning and maintenance process has been completed, the LED lamp turns off or, alternatively, changes colour. Alternatively, the signalling means are constituted by a timer which is actuated once the release means 6 have been actuated. According to a preferred embodiment, the signalling means can be set by a user according to the sanitising, cleaning or descaling composition 20 prepared in the release system 3. In this regard, a guide for the device 1 may be provided which suggests the suitable times necessary for the action of each sanitising, cleaning or descaling composition 20.

[0037] With particular reference to Figure 1, according to one embodiment, the support portion 4 has a plurality of folding lines 9 to allow folding the support portion 4. According to a preferred embodiment, there are four folding lines 9 extending between opposite ends of the support portion 4. Preferably, the support portion 4 may be folded from the outside inwards. Accordingly, the support portion 4 has a central area 8 and a frame 81. The central area 8 houses the release system 3 and is separated from the frame 81 through the folding lines 9. According to this embodiment, the folding lines 9 allow the frame 81 to be folded with respect to the central area 8, as shown in Figure 2, in order to overlap the frame 81 on the central area 8.

[0038] Accordingly, according to this embodiment, the device 1 can be switched between a first configuration in which the support portion 4 is folded and a second configuration in which the support portion 4 is unfolded. Advantageously, the device 1 occupies less space when the support portion 4 is folded. The device 1 is preferably arranged in the first configuration during sale and storage so as to allow using a smaller and space-saving package. For use, on the other hand, a user switches the device 1 to the second configuration.

[0039] The support portion 4 has notches 10 couplable to the release system 3 such that the support portion 4 can be closed on the release system 3. In particular, the notches have a shape and a dimension that is couplable to the release system 3. The notches 10 are formed on the frame 81 at the release system 3 and are configured to mate with the release system 3 and to allow the frame 81 to overlap the central area 8.

[0040] The support portion 4 comprises a first surface 41 configured to be arranged in contact with the bowl 2 of a WC. The support portion 4 further comprises a second surface 42 opposite to the first surface 41. In other words, in use, the first surface 41 is positioned as facing inside the WC bowl 2 while the second surface 42 is positioned as facing the bathroom environment.

[0041] The first surface 41 comprises a portion of non-woven mat 11 soaked with a sanitising composition. Preferably, this portion of non-woven mat 11 is made of microfibre.

5 **[0042]** This portion of non-woven mat 11 is conformed so as to act on the surface on which it is laid with a pressure and rubbing effect. The portion of non-woven mat 11, when the device is installed, is conformed to disinfect the portion of the bowl 2 on which the support portion 4 is laid.

10 **[0043]** According to a preferred embodiment, at least the support portion 4 can be re-used. Preferably, the support portion 4 and the container 3 of the device 1 can be re-used by inserting cartridges of sanitising, cleaning or descaling product 20 into the release device 3, as mentioned above. In accordance with this embodiment, the portion of non-woven mat 11 is separable from the first surface 41, for example by means of a tear-off adhesion system.

20 **[0044]** According to one embodiment, a spare part is provided for the portion of non-woven mat 11, which can be supplied separately or in conjunction with the device 1. Alternatively, the portion of non-woven mat 11 can be of the reusable type and is therefore washable and sanitisable. The portion of non-woven mat 11 is prepared for a new use by soaking it with a new sanitising substance.

25 **[0045]** Alternatively, the device 1 is for single use. In this case, the device 1 will be identical but the materials used for the various components will have disposable characteristics. Accordingly, preferably, the release system 3, the support portion 4 and the sealing edge 5 can be easily separated to promote easy recycling of the device 1 itself.

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35 **[0046]** Sanitising, cleaning and maintaining the WC involves the steps indicated below. A user arranges a device 1, in which a sanitising, cleaning or descaling composition 20 is inserted in the release system 3, on a WC bowl 2 and then actuates the release means 6 to release the sanitising, cleaning or descaling composition 20 inside the bowl 2. When the signalling means or the actuation and processing times of the product signal the successful sanitising, cleaning and maintenance completion, the user actuates the flush and removes the device 1 from the bowl 2.

40 **[0047]** Therefore, in case the device 1 is for single use, the user separates the release system 3 from the support portion 4 and from the sealing edge 5 in order to dispose of them appropriately into the waste. Alternatively, in the case of a reusable support portion 4 and container 3, the user arranges in the container 3 a new cartridge of cleaning sanitising or descaling composition 20 and removes the portion of non-woven mat 11 for replacing or washing and sanitising it, so as to prepare the device 1 for a new use.

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Claims

1. A device (1) for sanitising, cleaning and providing maintenance to a WC, said device (1) being configured to be positioned on a bowl (2) of an open WC, said device (1) comprising:
 - a release system (3) for releasing a sanitising, cleaning or descaling composition (20) positionable as facing inside a WC bowl (1), said release system (3) being configured to eject the sanitising, cleaning or descaling composition (20) inside the WC;
 - a support portion (4) connected to the release system (3) and surrounding the release system (3), said support portion (4) being configured to be laid on the bowl (2) of a WC;
 - a sealing edge (5) connected in a continuous manner to the support portion (4) and surrounding the support portion (4), said sealing edge (5) being configured to adhere to an outer edge (21) of the bowl (2) for sealing it and insulating the inside of the bowl (2) from the outer environment.
2. The device (1) according to claim 1, comprising release means (6) actuatable to release the sanitising, cleaning or descaling composition (20) inside the bowl (2).
3. The device (1) according to claim 2, wherein the release system (3) has a hooking system (7) positionable as facing inside the bowl (2) to allow ejecting the sanitising, cleaning or descaling composition (20), said release means (6) being opposite to said openable area (7) to be actuated by a user.
4. The device (1) according to any one of the preceding claims, wherein the release system (3) comprises signalling means configured to signal to a user the successful sanitising, cleaning and maintenance completion.
5. The device (1) according to any one of the preceding claims, wherein the sealing edge (5) is made of a polymeric material, preferably cellophane.
6. The device (1) according to any one of the preceding claims, wherein the support portion (4) has a plurality of folding lines (9) to allow folding said support portion (4).
7. The device (1) according to the preceding claim, wherein the release system (3) is arranged in the middle of the support portion (4), said support portion (4) having notches (10) couplable to the release system (3) such that the support portion (4) may be folded on the release system (3).
8. The device (1) according to any one of the preceding claims, wherein the support portion (4) comprises a first surface (41) configured to be arranged in contact with the bowl (2) of a WC, and a second surface (42) opposite to the first surface (41), said first surface (41) comprising a portion of non-woven mat (11) soaked with a sanitising composition.
9. The device (1) according to any one of the preceding claims, wherein the support portion (4) comprises a safety valve (12) comprising a filter.
10. The device (1) according to claim 8, wherein at least the support portion (4) can be re-used replacing the sanitising, cleaning or descaling composition (20), the portion of non-woven mat (11) being separable from the first surface (41).

Fig. 1

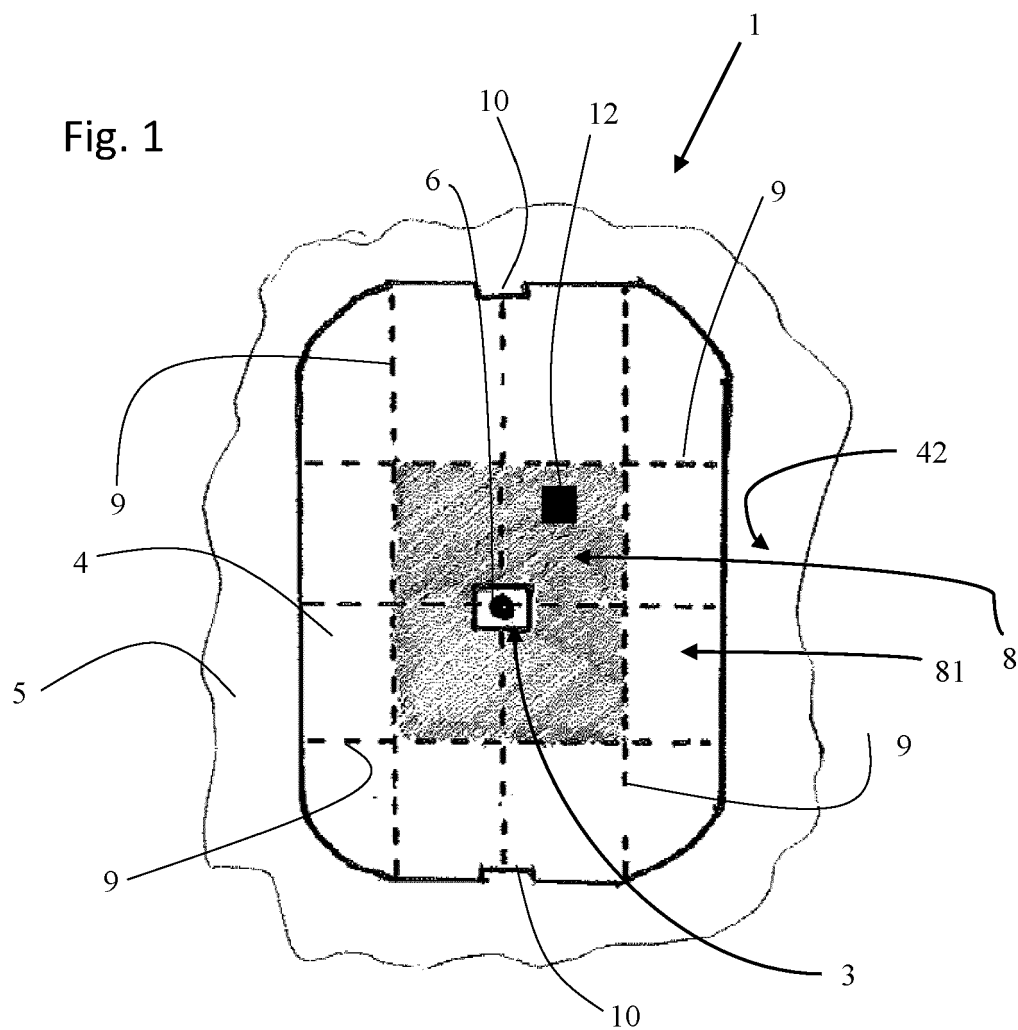


Fig. 2

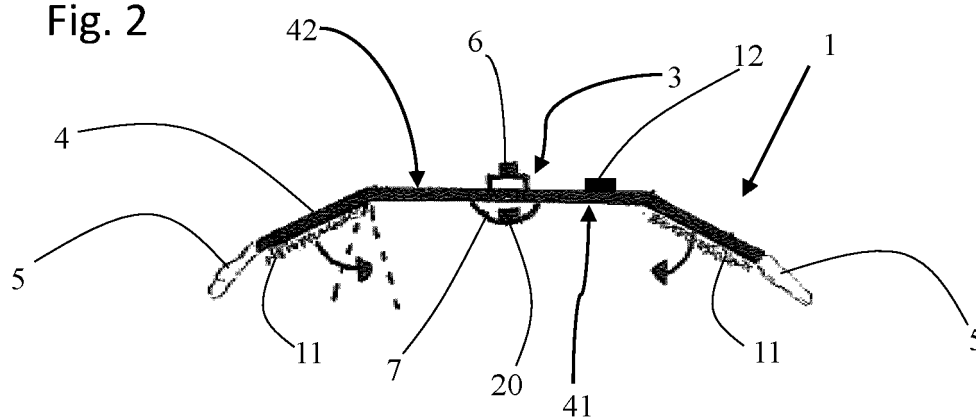
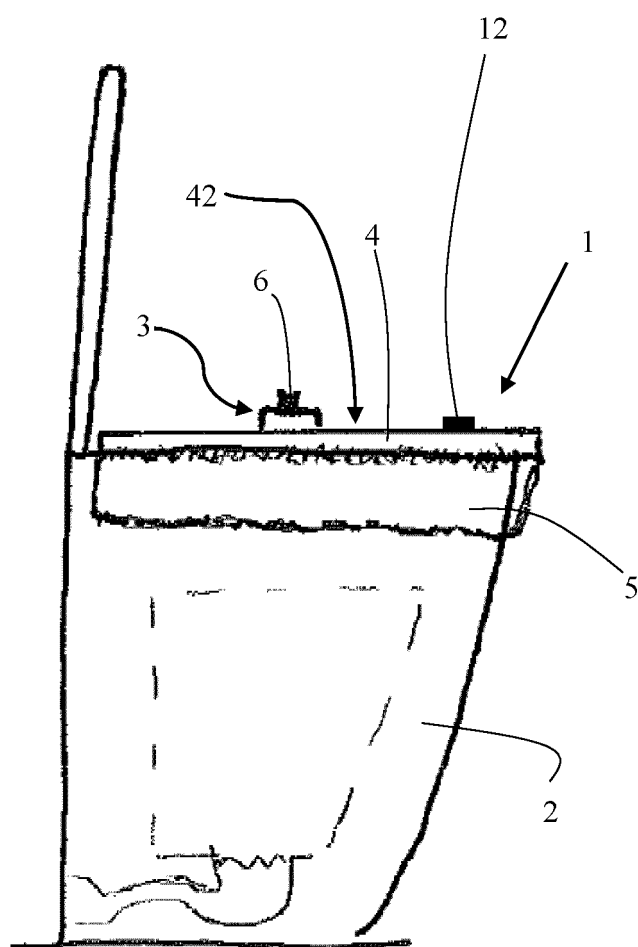


Fig. 3





EUROPEAN SEARCH REPORT

Application Number
EP 21 15 3913

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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 E03D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 14 June 2021	Examiner Boyer, Olivier
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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EPO FORM 1503 03.82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

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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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14-06-2021

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