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(54) **AUTOMATED SCENT DISPENSING SYSTEM FOR TOILETS**

(57) The automated scent dispensing system for toilets includes a container holding a scented substance, a fastener designed to attach the container to the toilet bowl, a dispenser that releases the substance into the

bowl, and a sensor that detects the presence of a user on the toilet. Upon detecting a user, the sensor activates the dispenser to release the scented substance, enhancing the overall restroom experience.

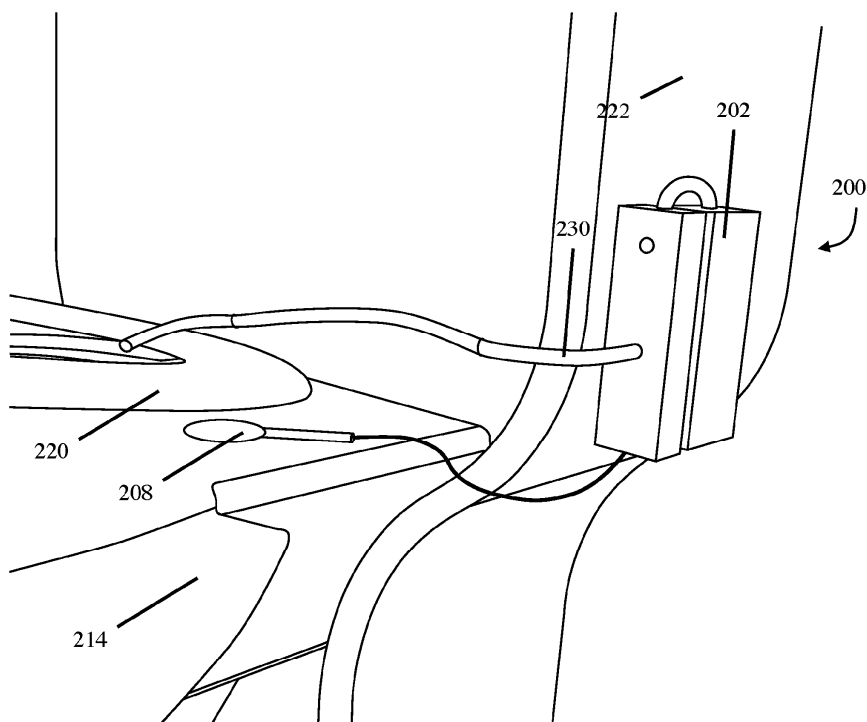


FIG. 2

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Description

TECHNICAL FIELD

[0001] The technical field relates generally to home sanitary appliances and, more specifically, to devices and methods for automatically dispensing substances into a toilet bowl.

BACKGROUND

[0002] Consumers are increasingly seeking more hygienic and pleasant restroom experiences. This demand has led to the development of various devices and products for cleaning, maintaining, and freshening restrooms and toilets. In the case of toilets, there have been different attempts to create automatic systems that introduce substances directly into the toilet bowl for purposes like cleaning, deodorizing, aromatizing the water, and cleaning the device.

[0003] One approach involves pills placed inside the toilet bowl, which dissolve gradually as water flows over them during flushing. However, this method offers limited control over the timing and amount of substance released. Another approach uses dispensers placed in the water tank that release a substance into the water during flushing. While these offer some automation, they still do not address the need for precise timing and dosage. There are also devices that dispense substances at set intervals, but these do not consider actual toilet usage, potentially leading to waste and inefficiency.

[0004] Many toilet bowl cleaning solutions involve devices attached to the rim or placed within the water tank. Some devices are inserted into auxiliary apertures in the toilet tank. These typically have a tube holding cleaning material and a dosage mechanism that dispenses a specific amount into the tank upon flushing. Others rely on float-activated systems, using the changing water level in the tank to release cleaning agents. These often involve a float mechanism linked to a dispenser that releases a measured amount of cleaner when the water level drops.

[0005] While these devices offer some automation, they fall short in consistently delivering a precise amount of a substance precisely when needed before using the toilet. This lack of precision in timing and dosage can hinder the effectiveness of cleaning agents, deodorizers, and fragrances.

[0006] Therefore, there is a pressing need for innovative solutions in automated toilet technologies, and more specifically for methods and systems that improve over the prior art in delivering substances to toilets.

SUMMARY

[0007] An automated scent dispensing system for toilets is disclosed. This Summary is provided to introduce a selection of disclosed concepts in a simplified form that

are further described below in the Detailed Description including the drawings provided. This Summary is not intended to identify key features or essential features of the claimed subject matter. Nor is this Summary intended to be used to limit the claimed subject matter's scope.

[0008] The automated scent dispensing system for toilets includes a container holding a scented substance, a fastener designed to attach the container to the toilet bowl, a dispenser that releases the substance into the bowl, and a sensor that detects the presence of a user on the toilet. Upon detecting a user, the sensor activates the dispenser to release the scented substance, enhancing the overall restroom experience. In another embodiment, the automated scent dispensing system for toilets includes a container holding a scented substance, a fastener to attach the container to the toilet bowl, and a pump designed to dispense the substance into the bowl, which is activated when the toilet seat is pressed between the toilet and the toilet seat by means of the user's weight, triggering the pump as the seat contacts it.

[0009] In another embodiment, a method for automatically dispensing a scented substance into a toilet bowl involves providing a device with a container holding the scented substance, a fastener for securing the container to the bowl, a dispenser, and a sensor that detects a user's presence, and, upon detection, controlling the dispenser to release the substance into the bowl.

[0010] Additional aspects of the disclosed embodiment will be set forth in part in the description which follows, and in part will be obvious from the description, or may be learned by practice of the disclosed embodiments. The aspects of the disclosed embodiments will be realized and attained by means of the elements and combinations particularly pointed out in the appended claims. It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the disclosed embodiments, as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] The accompanying drawings, which are incorporated in and constitute part of this specification, illustrate embodiments of the invention and together with the description, serve to explain the principles of the disclosed embodiments. The embodiments illustrated herein are presently preferred, it being understood, however, that the invention is not limited to the precise arrangements and instrumentalities shown, wherein:

FIG. 1 is a block diagram showing the components of the automated scent dispensing system for toilets, according to an example embodiment;

FIG. 2 is a side perspective view of the automated scent dispensing system in use on a toilet, according to an example embodiment;

FIG. 3 is a side perspective view of another embodiment of the automated scent dispensing system in

use on a toilet, according to an example embodiment;

FIG. 4 is a side perspective view of yet another embodiment of the automated scent dispensing system in use on a toilet, according to an example embodiment;

FIG. 5 is a side perspective view of yet another embodiment of the automated scent dispensing system in use on a toilet, according to an example embodiment;

FIG. 6 is a side perspective view of yet another embodiment of the automated scent dispensing system in use on a toilet, according to an example embodiment.

DETAILED DESCRIPTION

[0012] The following detailed description refers to the accompanying drawings. Wherever possible, the same reference numbers are used in the drawings and the following description to refer to the same or similar elements. While embodiments may be described, modifications, adaptations, and other implementations are possible. For example, substitutions, additions, or modifications may be made to the elements illustrated in the drawings, and the methods described herein may be modified by substituting, reordering, or adding stages to the disclosed methods. Accordingly, the following detailed description does not limit the claimed subject matter. Instead, the proper scope of the claimed subject matter is defined by the appended claims.

[0013] The claimed subject matter provides a significant advancement over the prior art by addressing the need for a toilet dispensing device that delivers a precise amount of a scented substance at the crucial moment immediately before toilet use. Existing solutions, such as dissolvable tablets, in-tank dispensers, and time-based dispensers, lack control over timing (immediately before using the toilet) and dosage. Devices relying on float-activated mechanisms within the water tank fail to achieve the desired precision for optimal effectiveness. Overflow pipe-mounted deodorizers, while attempting to target refill water, still do not address the need for precise, user-specific dispensing directly into the bowl at the precise time needed. The claimed subject matter's advantage stems from incorporating a sensor that detects the presence of a user on the toilet bowl to trigger the scent application. This sensor-driven activation ensures that the scented substance is dispensed only when needed, maximizing its impact. Unlike prior art that relies on manual activation, flushing mechanisms, or less precise triggers like fill valve connections, the claimed subject matter directly links scented substance delivery to user presence, enhancing hygiene and user experience. By dispensing the scented substance directly into the toilet bowl water right before use, the claimed subject matter ensures its maximum effectiveness in cleaning, deodorizing, and/or fragrance. This approach surpasses

the limitations of prior art, offering a novel solution for a more hygienic and pleasant restroom experience.

[0014] The automated scent dispensing system for toilets will now be described with reference to Figures 1-7. FIG. 1 is a block diagram showing the components of the automated scent dispensing system 100 for toilets, according to an example embodiment. The system 100 includes an assembly 102 comprising a container 104 for holding a scented substance, a sensor 108, a pump 106 and a dispenser 110 for dispensing the scented substance, all of which are fastened to a toilet bowl 114 via a fastener 112.

[0015] The system 100 employs a container 104 designed to hold the scented substance intended for dispensing into the toilet bowl 114. This container can be constructed from various materials suitable for storing liquids, gels, powders, or other forms of dispensing agents. Potential construction materials for the container include plastics, rubbers, metals, ceramics, or combinations thereof. The container's size and shape can vary depending on factors like the type and volume of scented substance it holds, as well as considerations for fitting within the toilet environment. For example, it could be a compact cartridge, a refillable reservoir, or a disposable unit, depending on the specific design.

[0016] The scented substance held within the container 104 can encompass a range of agents that enhance toilet hygiene or fragrance. The scented substance can be a cleaning agent, a deodorant, a fragrance, or a combination thereof. The specific formulation and properties of the substance will depend on its intended purpose and desired effects. In one embodiment, the scented substance is an oil configured for forming a protective film on a surface of water in the toilet bowl water, trapping odours below the surface.

[0017] A fastener 112 plays a critical role in securing the assembly 102 to the toilet bowl 114. This fastener 112 ensures the assembly 102 is held firmly in place, preventing accidental dislodging or movement during use. The fastener can be implemented in various ways, such as clips, clamps, brackets, adhesives, magnets, or any other suitable means that provide a secure attachment to the toilet bowl's structure. In one example, a clip-based fastener could securely grip the rim of the toilet bowl, and a clamp could provide an adjustable fit.

[0018] The dispenser 110 is a mechanism responsible for physically introducing the scented substance stored in the container 104 into the toilet bowl 114. The dispenser may push or spray the scented substance into the toilet bowl. The dispenser may also control the dosage and manner in which the scented substance is released. The dispenser may utilize a pump, valve, nozzle, or other dispensing element. A pump 106 may be a component of the dispenser and may comprise a mechanism for pumping the scented substance from the container 104 into the toilet bowl 114. In one embodiment, the pump may be located between the container 104 and the dispenser 110. A piston may be used as a dispensing mechanism,

as well as other types of pumps, such as peristaltic, diaphragm, or gear pumps. However, it is worth noting that the sources do not explicitly mention peristaltic, diaphragm, or gear pumps, so you may want to independently verify their suitability for this application.

[0019] The dispenser can be fabricated from a range of materials chosen for their compatibility with the scented substance being dispensed, durability in a humid environment, and ease of manufacturing, such as plastics and metals, such as stainless steel or treated aluminium. Ceramics could be considered for their resistance to chemical interactions, while elastomers like silicone could be used for seals or components requiring flexibility.

[0020] A sensor 108 detects the presence of a user on the toilet bowl 114. The sensor acts as the trigger for the entire dispensing process. Examples of sensors that may be used include weight sensors, temperature sensors, pressure sensors, and proximity sensors. Said sensors are strategically positioned to reliably detect when a user sits on the toilet. In one embodiment, a battery or power connection provides the necessary power to the sensor, pump and dispenser, all of which are electrically controlled and operated.

[0021] The components of the system 100 work in concert to achieve the claimed embodiments' purpose of timely and controlled scented substance dispensing. The assembly 102, holding the scented substance within container 104, is securely fastened to the toilet bowl 114 via a fastener 112. When a user sits on the toilet, the sensor 108 detects their presence—either through weight, temperature change, or proximity. This detection signal triggers the dispenser 110, which may trigger a pump 106, causing it to release a predetermined amount of the scented substance from the container 104 into the toilet bowl 114. This sensor-driven activation ensures that the scented substance is dispensed only when needed, right before toilet use, maximizing its effectiveness and enhancing user experience.

[0022] Note that in some embodiments, the system 100 and assembly 102 does not include a sensor 108. In these embodiments, the act of the user sitting on the toilet provides the necessary force for the pump and/or dispenser to dispense the scented substance. The aforementioned embodiments are described in more detail with respect to Figures 3-6 below.

[0023] FIG. 2 is a side perspective view of an automated scent dispensing system 200 in use on a toilet, according to an example embodiment. FIG. 2 shows an automated scent dispensing system 200 comprising a sensor 208, such as a pressure sensor, temperature sensor or a contact sensor, placed under a toilet seat 220 of a toilet bowl 214. FIG. 2 shows the automated scent dispensing system 200 has an assembly 202, including a container, pump and dispenser, located on a side of the toilet tank 222. When the sensor 208 detects that the toilet seat has been pressured when in the down position, or that a person sits on the toilet seat, the pump

of the dispenser is triggered, which results in the release of the scented substance from the container into the toilet bowl 214 via the conduit 230.

[0024] FIG. 3 is a side perspective view of another embodiment of the automated scent dispensing system 300 in use on a toilet, according to an example embodiment. FIG. 3 shows an automated scent dispensing system 300 comprising a pump 306 placed under a toilet seat 320 of a toilet bowl 314. A structure 340 sits on top of the pump 306, which provides a platform for the toilet seat to rest on top of, when the toilet seat 320 is pressured when in the down position, or a person sits on the toilet seat. FIG. 3 shows the automated scent dispensing system 300 has an assembly 302, including a container and dispenser, located on a side of the toilet bowl 314. When the toilet seat is pressured when in the down position, or a person sits on the toilet seat, said force activates the pump 306, which results in the release of the scented substance into the toilet bowl 314 via the conduit 330.

[0025] FIG. 4 is a side perspective view of yet another embodiment of an automated scent dispensing system 400 in use on a toilet, according to an example embodiment. FIG. 4 shows an automated scent dispensing system 400 comprising a pump 406 placed under a toilet seat 420 of a toilet bowl 414. FIG. 4 shows the automated scent dispensing system 400 has an assembly 402, including a container and dispenser, attached to a side of the toilet bowl 414 via a fastener 412. When the toilet seat is pressured when in the down position, or a person sits on the toilet seat, said force activates the pump 406, which results in the release of the scented substance into the toilet bowl 414 via the conduit 430.

[0026] FIG. 5 is a side perspective view of yet another embodiment of an automated scent dispensing system 500 in use on a toilet, according to an example embodiment. FIG. 5 shows an automated scent dispensing system 500 comprising a pump 506 placed under a toilet seat 520 of a toilet bowl 514. FIG. 5 shows the automated scent dispensing system 500 has an assembly 502, including a container and dispenser, attached to a side of the toilet bowl 514. When the toilet seat is pressured when in the down position, or a person sits on the toilet seat, said force activates the pump 506, which results in the release of the scented substance into the toilet bowl 514 via the conduit 530.

[0027] FIG. 6 is a side perspective view of yet another embodiment of the automated scent dispensing system 600 in use on a toilet, according to an example embodiment. FIG. 6 shows an automated scent dispensing system 600 comprising a pump 606 placed under a toilet seat 620 of a toilet bowl 614. FIG. 6 shows the automated scent dispensing system 600 has an assembly 602, including a container, pump and dispenser, located on a side of the toilet tank 622. When the toilet seat is pressured when in the down position, or a person sits on the toilet seat, said force activates the pump 606, which results in the release of the scented substance

into the toilet bowl 614 via the conduit 630.

[0028] In one embodiment, release of pressure upon the pump 106 may result in scented substance entering the pump in preparation for the next dispensing action. Recall that when pressure is applied to the pump 106, it dispenses the scented substance into the toilet bowl 114, as described above. But when that pressure is released, the pump 106 may suck scented substance back into the container 104 causing the scented substance in the container to be mixed as desired. In the embodiments shown in Figures 3, 4, 5 and 6, the release of the pressure applied to the pump 106 may cause the pump to expand. Such expansion force may cause the scented substance to be pulled from the container 104 into the pump 106. Therefore, the scented substance now contained inside the pump 106 would be ready to be dispensed upon being submitted to pressure once more. This cycle can repeat as long as there is scented substance in the container 104.

[0029] Although the subject matter has been described in language specific to structural features and/or methodological acts, it is to be understood that the subject matter defined in the appended claims is not necessarily limited to the specific features or acts described above. Rather, the specific features and acts described above are disclosed as example forms of implementing the claims.

Claims

1. An automated scent dispensing system for toilets, the system comprising:

- a) a container;
- b) a scented substance disposed within the container;
- c) a fastener configured to couple the container to a toilet bowl;
- d) a dispenser configured to dispense the substance from the container into the toilet bowl; and
- e) a sensor configured to detect a presence of a user on the toilet bowl, the sensor further configured to trigger the dispenser to dispense the substance into the toilet bowl in response to detecting the presence of the user.

2. The system of claim 1, wherein the sensor is pressure sensor configured to detect a weight of the user on the toilet bowl.

3. The system of claim 1, wherein the sensor is a temperature sensor configured to detect a temperature change on the toilet bowl indicative of the presence of the user.

4. The system of claim 1, wherein the sensor is a

proximity sensor configured to detect a proximity of the user to the toilet bowl.

5. The system of claim 1, wherein the dispenser comprises a piston configured to dispense the substance.

6. The system of claim 1, wherein the substance comprises a fragrance.

7. The system of claim 1, wherein the substance comprises a deodorant.

8. The system of claim 1, wherein the substance comprises a cleaning agent.

9. The system of claim 1, wherein the substance comprises an oil configured for forming a protective film on a surface of water in the toilet bowl water, trapping odours below the surface.

10. The system of claim 1, further comprising a repository coupled to the container, the repository configured to store an additional amount of the substance.

11. An automated scent dispensing system for toilets, the system comprising:

- a) a container;
- b) a scented substance disposed within the container;
- c) a fastener configured to couple the container to a toilet bowl;
- d) a pump configured to dispense the substance from the container into the toilet bowl and configured to be coupled to the toilet bowl such that the toilet seat contacts the pump when in the down position; and
- e) wherein when a user applies pressure to the toilet seat in the down position, the toilet seat trigger the pump to dispense the substance into the toilet bowl.

12. The system of claim 11, wherein the pump dispenses the substance when the pump is compressed by the toilet seat.

13. The system of claim 11, wherein the substance comprises a fragrance.

14. The system of claim 11, wherein the substance comprises a deodorant.

15. The system of claim 11, wherein the substance comprises a cleaning agent.

16. The system of claim 11, wherein the substance comprises an oil configured for forming a protective

film on a surface of water in the toilet bowl water, trapping odours below the surface.

17. The system of claim 11, further comprising a repository coupled to the container, the repository configured to store an additional amount of the substance. 5
18. A method of automatically dispensing a scented substance into a toilet bowl, the method comprising: 10
- providing a device comprising: a container, a scented substance within the container, a fastener, a dispenser, and a sensor; 15
- coupling the container to the toilet bowl using the fastener; 15
- detecting, by the sensor, a presence of a user on the toilet bowl; and
- in response to detecting the presence of the user, controlling, by the sensor, the dispenser 20
- to dispense the substance from the container into the toilet bowl. 20

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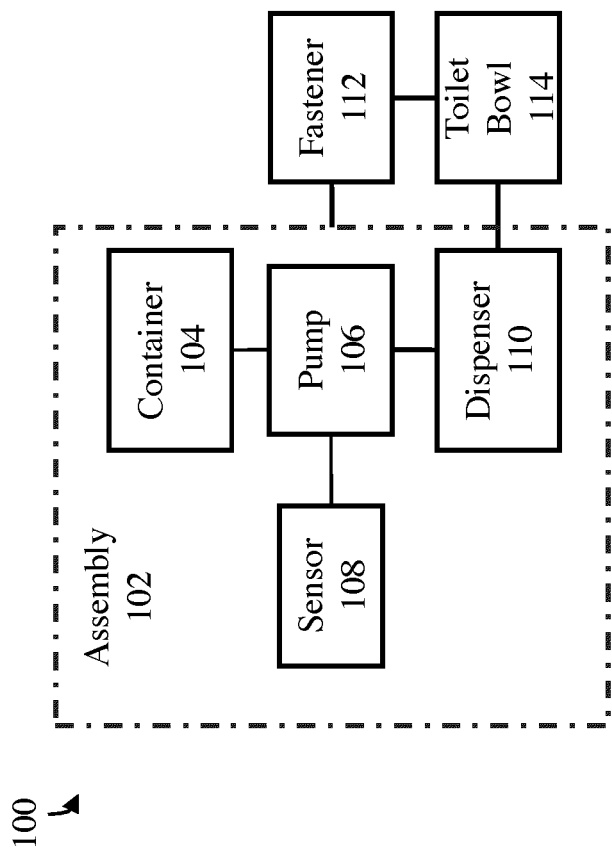


FIG. 1

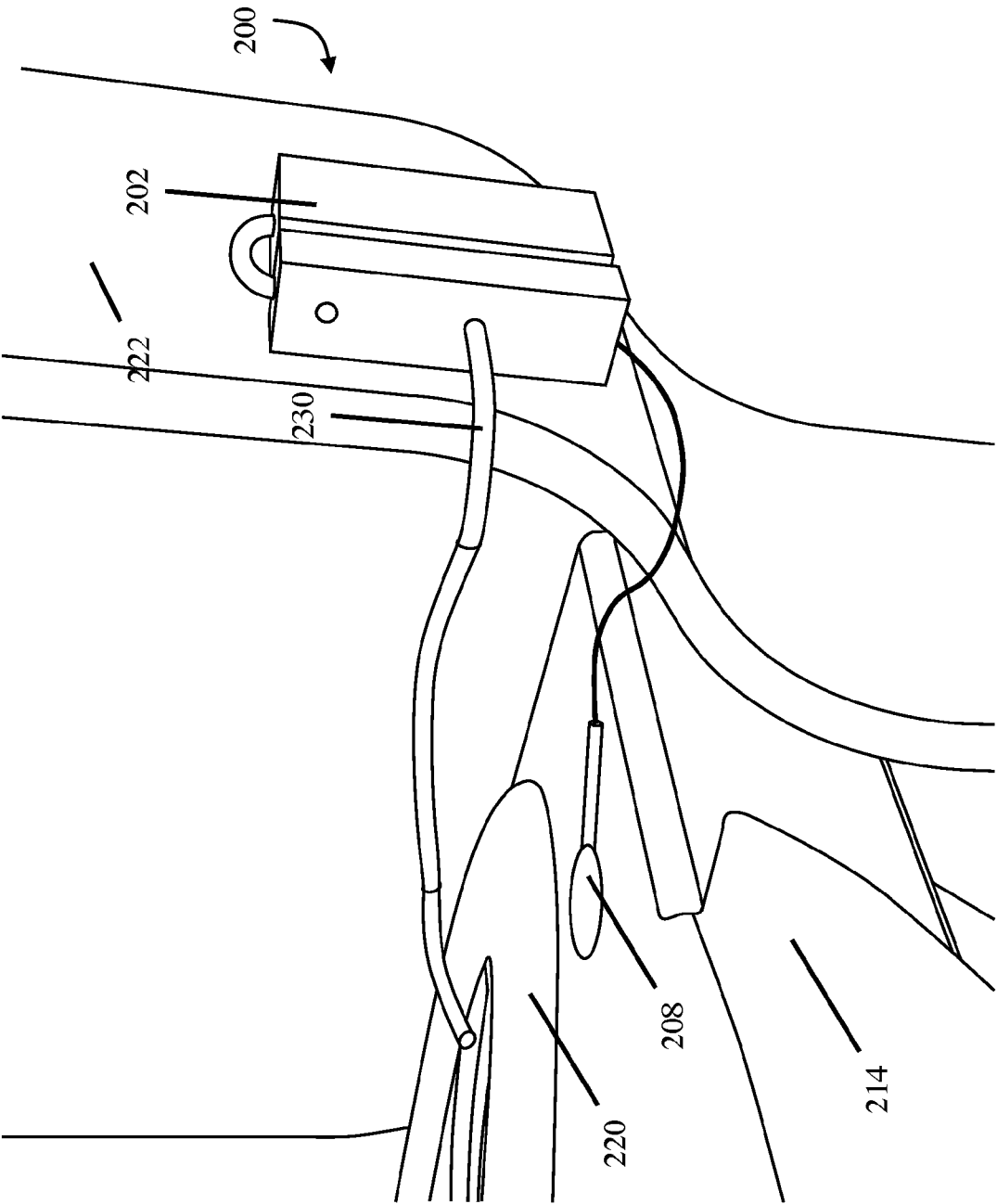


FIG. 2

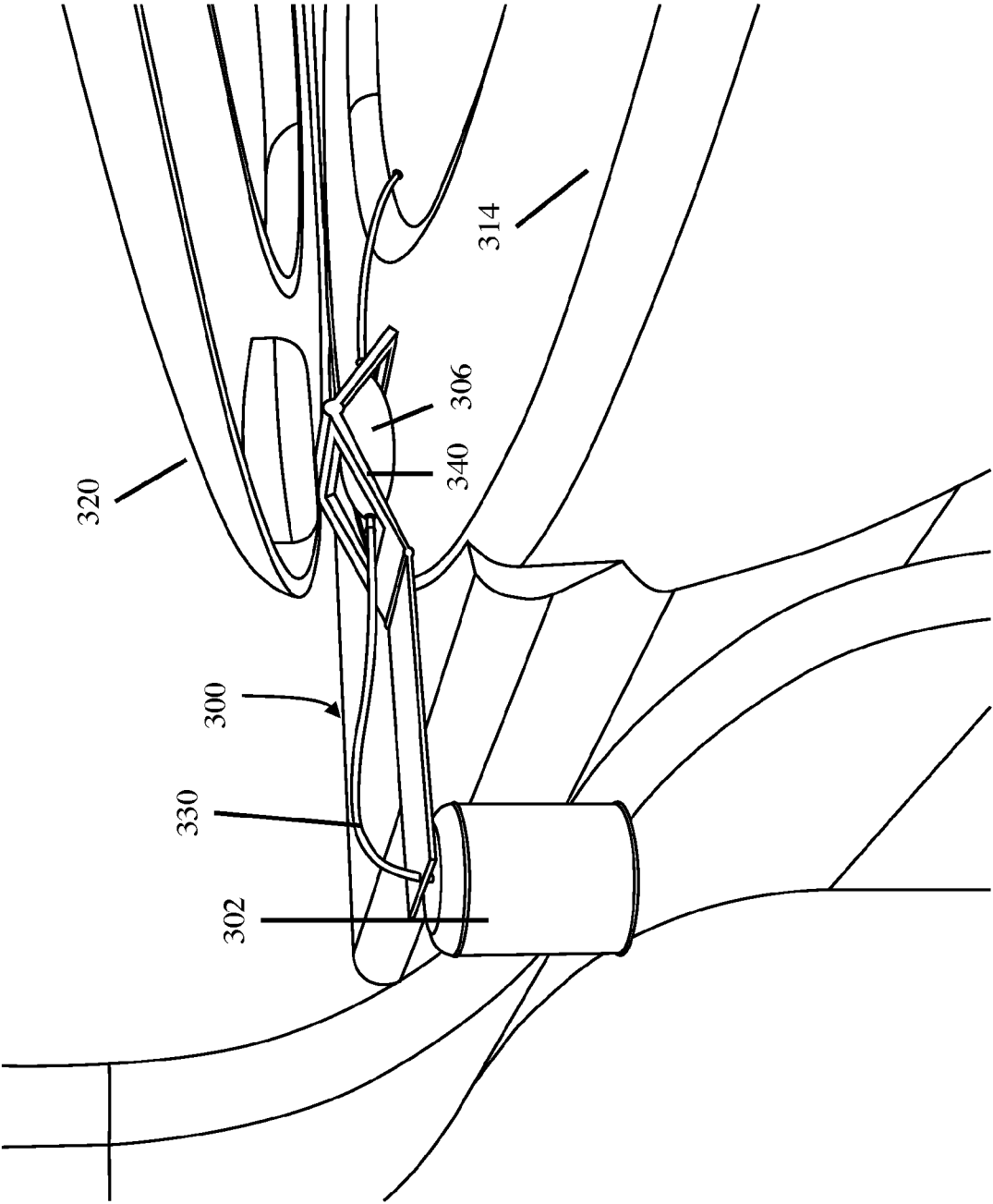


FIG. 3

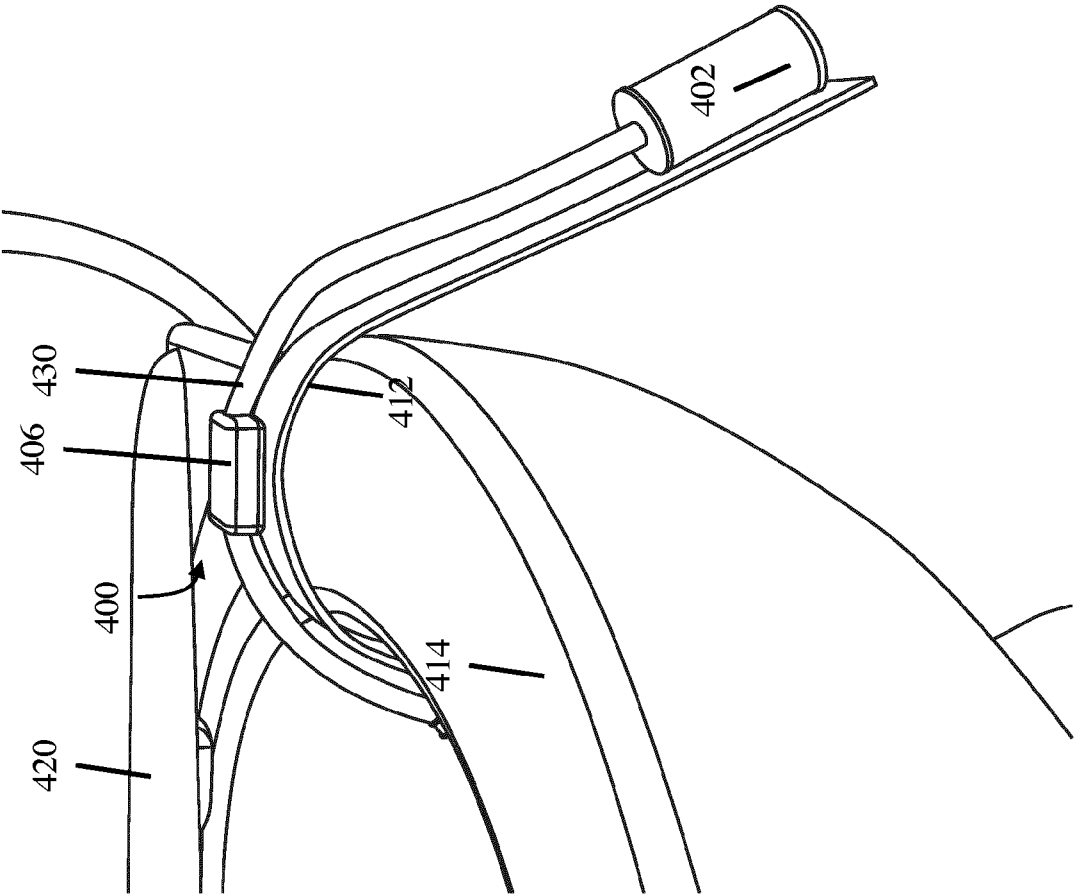


FIG. 4

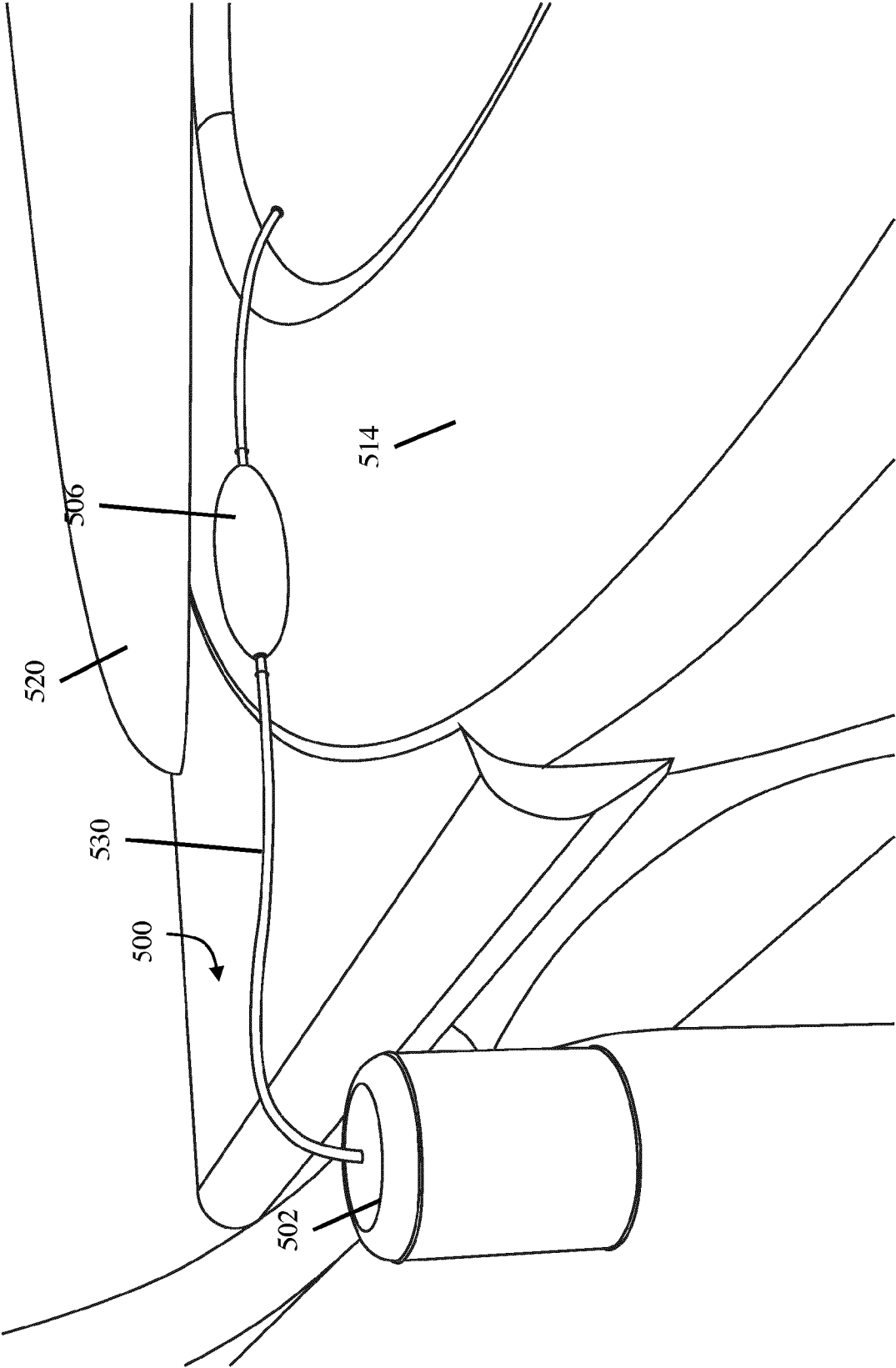


FIG. 5

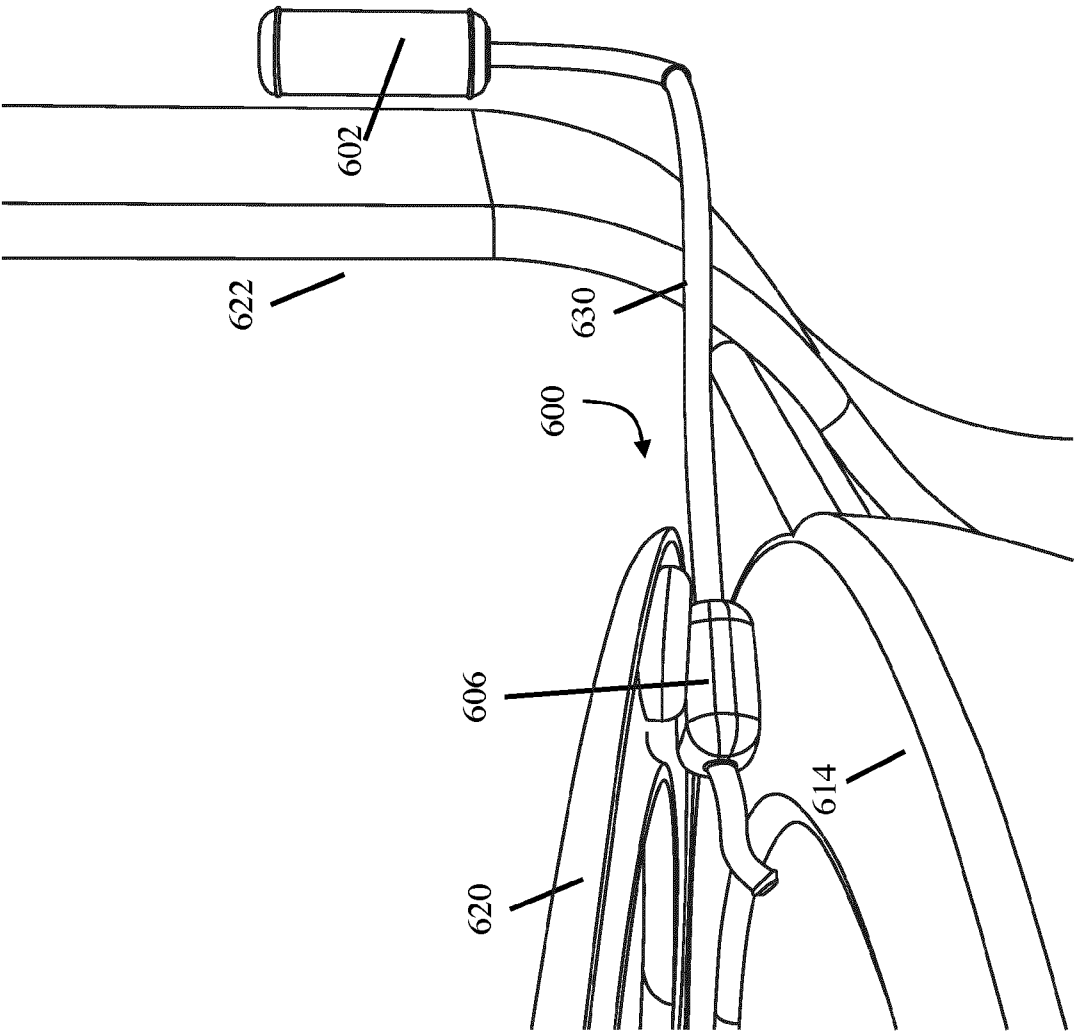


FIG. 6



EUROPEAN SEARCH REPORT

Application Number

EP 25 17 1751

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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Y	* paragraphs [0001] - [0034]; figures 1, 2 *	17	

The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E03D
Place of search			Examiner
Munich			Posavec, Daniel
Date of completion of the search			
18 September 2025			
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			

EPO FORM 1503 03.82 (P34C01)



Application Number

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing claims for which payment was due.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for those claims for which no payment was due.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☐ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☒ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

☐ The present supplementary European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims (Rule 164 (1) EPC).

**LACK OF UNITY OF INVENTION
SHEET B**

Application Number

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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 1-18

An automated scent dispensing system for toilets, the system comprising: a) a container; b) a scented substance disposed within the container; c) a fastener configured to couple the container to a toilet bowl; d) a dispenser configured to dispense the substance from the container into the toilet bowl; and e) a sensor configured to detect a presence of a user on the toilet bowl, the sensor further configured to trigger the dispenser to dispense the substance into the toilet bowl in response to detecting the presence of the user.

1.1. claims: 11-17

An automated scent dispensing system for toilets, the system comprising: a) a container; b) a scented substance disposed within the container; c) a fastener configured to couple the container to a toilet bowl; d) a pump configured to dispense the substance from the container into the toilet bowl and configured to be coupled to the toilet bowl such that the toilet seat contacts the pump when in the down position; and e) wherein when a user applies pressure to the toilet seat in the down position, the toilet seat trigger the pump to dispense the substance into the toilet bowl.

Please note that all inventions mentioned under item 1, although not necessarily linked by a common inventive concept, could be searched without effort justifying an additional fee.

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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EPO FORM P0459

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