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(54) **Raised toilet seat assembly**

(57) Disclosed is a raised toilet seat assembly with improved coupling features. The raised toilet seat assembly includes an adapter plate configured to couple to a toilet, a shoe configured to couple to the adapter plate, and a raised toilet seat configured to couple to the shoe thereby forming a fully assembled raised toilet seat assembly. In some embodiments, the adapter plate comprises a plurality of passages configured to fit about fasteners when positioned over holes at a rear portion of the toilet, and a slot configured to receive a first portion of the shoe when coupled thereto.

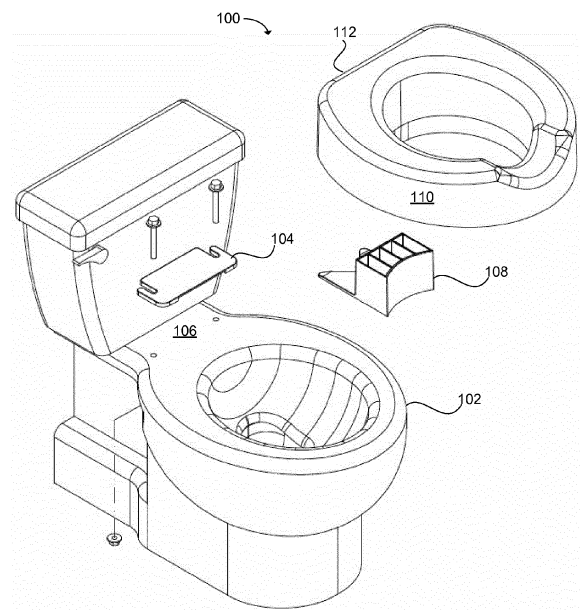


Fig. 1

Description

BACKGROUND

Field of the Invention

[0001] The present invention relates generally to raised toilet seats, and in particular, to a raised toilet seat assembly with improved coupling features to the underlying standard toilet seat.

Description of Related Art

[0002] Certain people may experience difficulty in bending, sitting and/or standing for various reasons. Often elderly people start to experience symptoms of arthritis or general muscle atrophy as they age. Youthful people may have injuries, or side effects from surgery (e.g., hip surgery) that make it difficult to sit and stand. For example, it may be difficult for such persons to sit on, and/or stand up from, a toilet seat that is low to the ground.

[0003] Specialty products have been designed to assist people that have difficulty sitting or standing. Such specialty products include rails mounted to the floor or the wall, and raised toilet seats, among other things. Raised toilet seats work by increasing the height of the toilet seat above the ground, and providing an inclined contour to the top of the raised toilet seat, making it easier for people to sit without extreme bending, and likewise making it easier for them to return to a standing position.

[0004] Current designs for raised toilet seats offer means for coupling the raised toilet seat to a conventional toilet. These coupling means can make use of existing attachment methods for attaching the raised toilet seat to the rim of the toilet, but such means tend to be overly complex, making assembly/disassembly of the raised toilet seat a difficult and tedious endeavor. Other less-secure means for coupling tend to offer a raised toilet seat that is unstable when coupled to the toilet, which can increase the risk of injury to a person using the raised toilet seat.

[0005] Furthermore, current methods of manufacturing raised toilet seats include blow molding and rotational molding techniques, which can have certain drawbacks, such as requiring much more material than is needed for the manufacture of the parts themselves, difficulty achieving high levels of production, and difficulty maintaining desired tolerances across products.

SUMMARY

[0006] This Summary is provided to introduce a selection of concepts in a simplified form that are further described below in the Detailed Description. This Summary is not intended to identify key features or essential features of the claimed subject matter, nor is it intended to be used to limit the scope of the claimed subject matter.

[0007] Accordingly, disclosed herein is a raised toilet seat assembly with improved coupling features. The raised toilet seat assembly may comprise an adapter plate configured to couple to an existing toilet, a shoe configured to couple to the adapter plate, and a raised toilet seat configured to couple to the shoe thereby forming a fully assembled raised toilet seat assembly.

[0008] According to various, but not necessarily all, embodiments of the invention there is provided a raised toilet seat assembly comprising: an adapter plate configured to couple to a toilet seat attachment point; a shoe comprising a first portion and a second portion, the first portion of the shoe configured to couple to the adapter plate; and a raised toilet seat having a forward portion and a rear portion, the raised toilet seat configured to couple to the second portion of the shoe at the rear portion of the raised toilet seat.

[0009] According to various, but not necessarily all, embodiments of the invention there is provided a raised toilet seat assembly comprising: a raised toilet seat configured to rest on a toilet bowl of a toilet, the raised toilet seat comprising an upper surface having an inclined contour and a rear portion including a recess on an underside of the rear portion; an adapter plate configured to couple to the toilet at a seat attachment point of the toilet; and a shoe comprising a first portion and a second portion, the first portion of the shoe configured to couple to the adapter plate via a sliding engagement between the first portion and the adapter plate, the second portion of the shoe configured to couple to the raised toilet seat via a sliding engagement between the second portion of the shoe and the recess on the underside of the rear portion.

[0010] According to various, but not necessarily all, embodiments of the invention there is provided a raised toilet seat assembly comprising: means for providing a raised seating surface configured to rest on a toilet bowl of a toilet; an adapter means for coupling to a toilet seat attachment point; and means for coupling the adapter means to the means for providing the raised seating surface.

[0011] In some embodiments, the adapter plate comprises a main body portion and end sections extending beyond the main body portion to define associated passages in the adapter plate for coupling to a toilet. When the adapter plate is oriented flat on a rear portion of the toilet between the toilet bowl and the water tank, the passages of the adapter plate may be positioned over holes on the rear portion of the toilet and may fit about fasteners such that the fasteners pass through the passages and into the holes in the rear portion of the toilet. In some embodiments, the adapter plate further comprises a slot configured to receive a first portion of the shoe when the adapter plate is coupled to the toilet and oriented such that the slot is facing downward. The shoe may further comprise a second portion configured to couple with a rear portion of the raised toilet seat.

[0012] In some embodiments, the coupling between the adapter plate and shoe, as well as between the shoe

and the raised toilet seat, may include an interference fit relation without the need for additional fastening components.

[0013] Through the improved coupling features of the raised toilet seat assembly disclosed herein, the adapter plate, the shoe and the raised toilet seat may be assembled with ease. Furthermore, the improved coupling features of the raised toilet seat allow each component of the assembly to be easily separated, or detached, from the other component parts of the assembly, allowing for quick interchangeability which may be useful for preparing the toilet for guests who do not require a raised toilet seat. Notably, the raised toilet seat assembly of the present invention does not require additional fastening elements beyond the adapter plate, the shoe and the raised toilet seat in order to fully assemble the raised toilet seat assembly onto an existing toilet. The embodiments disclosed herein provide improved convenience to a user as a consequence.

[0014] Other features and advantages of the present invention will become apparent from the following description of the invention, which refers to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The detailed description is described with reference to the accompanying figures. In the figures, the left-most digit(s) of a reference number identifies the figure in which the reference number first appears. The same reference numbers in different figures indicate similar or identical items.

[0016] Fig. 1 illustrates an exploded, perspective view of an example toilet and raised toilet seat assembly, the raised toilet seat assembly comprising an adapter plate, a shoe, and a raised toilet seat.

[0017] Fig. 2 illustrates a close-up perspective view of the adapter plate of Fig. 1 in further detail, the adapter plate comprising a main body portion and end sections extending from the main body portion to define passages for coupling to a conventional toilet, and further comprising a slot configured to receive a portion of the shoe of Fig. 1.

[0018] Fig. 3A illustrates an exploded, perspective view of the example toilet and the adapter plate of Fig. 1, the adapter plate being configured to couple to the toilet by receiving fasteners through the passages of the adapter plate;

[0019] Fig. 3B illustrates an exploded, perspective view of the example toilet and the adapter plate of Fig. 1 with the adapter plate in an alternative orientation to that shown in Fig. 3A.

[0020] Figs. 4A and 4B illustrate the shoe of Fig. 1 in further detail, the shoe comprising a first portion configured to slide into the slot of the adapter plate for coupling the shoe to the adapter plate of Fig. 1, and further comprising a second portion configured to slide into a rear portion of the raised toilet seat of Fig. 1 for coupling the

raised toilet seat to the shoe.

[0021] Fig. 5 illustrates a perspective view of the example toilet with the adapter plate of Fig. 1 coupled to the toilet, and the shoe of Fig. 1 coupled to adapter plate.

[0022] Fig. 6 illustrates a side view of the raised toilet seat of Fig. 1 in further detail, the raised toilet seat comprising a top portion with an inclined contour, a rear portion, and a bottom portion that is smaller than the top portion to fit within a toilet bowl of the toilet in Fig. 1.

[0023] Fig. 7 illustrates a perspective view of the example toilet and raised toilet seat assembly of Fig. 1 when fully assembled.

[0024] Fig. 8 illustrates a side elevation view of the fully assembled example toilet and raised toilet seat assembly of Fig. 7, along with a close-up view of the adapter plate, the shoe and the rear portion of the raised toilet seat when fully assembled.

DETAILED DESCRIPTION

[0025] Referring to Fig. 1, there is illustrated a raised toilet seat assembly 100 according to an example embodiment. The raised toilet seat assembly 100 is shown from a perspective, exploded view and is intended for use with a toilet 102, such as a conventional toilet. The raised toilet seat assembly 100 comprises an adapter plate 104 configured to removably couple to the toilet 102 at a rear portion of the toilet 106, a shoe 108 configured to removably couple to the adapter plate 104, and a raised toilet seat 110 configured to removably couple to the shoe 108 at a rear portion of the raised toilet seat 112. The toilet 102 may be any standard toilet with fasteners to couple a standard lid to the toilet 102, the fasteners including, but not limited to screws, bolts with corresponding nuts, etc. The toilet 102 is shown and described herein in only as much detail as necessary to understand the present invention.

[0026] In some embodiments, the shoe 108 engages the adapter plate 104 by slidably coupling with the adapter plate 104 via an interference fit relation. The shoe 108 also engages with the raised toilet seat 110 by slidably coupling with the raised toilet seat 110 via an interference fit relation. That is, portions of the shoe 108 may each be slidably coupled to the adapter plate 104 and the raised toilet seat 110, respectively, in a manner of an interference fit relation whereby the coupled components are securely coupled by the force of friction without the need for additional fastening elements. This coupling allows for assembling/disassembling the raised toilet seat assembly 100 with greater ease, allowing for each component part of the assembly to be easily separated or detached from the other component parts of the assembly, and therefore enabling quick interchangeability which may be useful for preparing the toilet for guests who do not require the raised toilet seat assembly 100. Although the illustrated examples herein show coupling between the component parts of the raised toilet seat assembly 100 via an interference fit relation, it is to be

appreciated that other means of coupling the shoe 108 to the adapter plate 104 and/or to the raised toilet seat 110 will be apparent to a person having ordinary skill in the art. Importantly, the raised toilet seat assembly 100 of the present invention does not require additional fastening elements beyond the component parts (i.e., the adapter plate 104, the shoe 108 and the raised toilet seat 110) in order to fully assemble the raised toilet seat assembly 100 and attach it to the toilet 102.

[0027] It is to be appreciated that the specific dimensions, proportions, shapes and configurations of each of the adapter plate 104, the shoe 108 and the raised toilet seat 110 are not specific to the present invention. For example, the raised toilet seat 110 may be shaped or contoured in various ways to provide a suitably inclined top surface, and the raised toilet seat 110 may be of various sizes, or heights, for a particular toilet configurations such that the adapter plate 104 and the shoe 108 may be of a suitable size to accommodate the coupling of the raised toilet seat 110 to the shoe 108 and to accommodate the coupling of the adapter plate 104 to the toilet 102.

[0028] In some embodiments one or more of the adapter plate 104, the shoe 108 and the raised toilet seat 110 may be made of plastic, such as molded plastic, or any other suitable material known in the art. Specifically, acrylonitrile butadiene styrene (ABS), or a suitable polymer, such as polyethylene, and the like, may be used in the manufacturing of the component parts of the raised toilet seat assembly 100. Suitable materials may be rigid or semi-rigid, waterproof, and/or resistant to chemicals, heat and stress. Additionally, the adapter plate 104, the shoe 108 and the raised toilet seat 110 are preferably separate units that are operably interconnected.

[0029] In some embodiments, one or more of the adapter plate 104, the shoe 108 and the raised toilet seat 110 may be manufactured using an injection molding technique, the process for which should be apparent to a person having ordinary skill in the art. By using an injection molding method to manufacture the adapter plate 104, the shoe 108 and/or the raised toilet seat 110, minimal material is used for the manufacture of the component parts, thereby preventing excess waste of material. Furthermore, injection molding techniques allow for easily forming the open cavity, or recess, on the underside, rear portion of the raised toilet seat 112, as will be explained in more detail, below.

[0030] Referring now to Fig. 2, an adapter plate 104 according to an example embodiment is shown in further detail. As illustrated, the adapter plate 104 comprises a predominantly flat, rectangular main body portion 202. The main body portion 202 includes a slot 204 configured to receive a portion of the shoe 108 shown in Fig. 1 when coupled thereto. The slot 204 is shown in Fig. 2 as a recess, or cutout, of the main body portion 202 and is shown in an open configuration. However, it is to be appreciated that the slot 204 may be an enclosed slot with openings on one or both ends of the main body portion 202 where the shoe 108 slides into the adapter plate 104.

[0031] The open configuration, shown in Fig. 2, allows for more flexibility in tolerances between the adapter plate 104 and the shoe 108, and allows for multiple orientations of the adapter plate 104 when coupled with the other components of the raised toilet seat assembly 100 of Fig. 1. Furthermore, the width of the slot 204 is designed to establish an interference fit relation with the shoe 108 when coupled thereto. Accordingly, the width of the respective portion of the shoe 108 that is to be received in the slot 204 of the adapter plate 104 may be slightly wider than the width of the slot 204 to establish the interference fit relation between the adapter plate 104 and the shoe 108.

[0032] In some embodiments, the adapter plate 104 further comprises two end sections 206a and 206b extending outward from the main body portion 202 and defining associated passages 208a and 208b, the passages 208a/b each configured to receive a screw, or similar fastener, typically found on a conventional toilet, such as the toilet 102 of Fig. 1. The configuration of the adapter plate 104 shown in Fig. 2 allows for the adapter plate 104 to be securely coupled to the toilet 102 via the fasteners, as further illustrated in Figs. 3A and 3B.

[0033] Referring now to Fig. 3A, the adapter plate 104 may be positioned in a flat orientation at the rear portion of the toilet 106, and at a toilet seat attachment point, with the slot 204 facing downward toward the ground, and with each passage 208a and 208b positioned over holes 302a and 302b on the rear portion of the toilet 106. The rear portion of the toilet 106 includes the area of the toilet that connects the toilet bowl to the water tank of the toilet 102. Furthermore, as illustrated in Fig. 3A, the standard lid of the toilet may be removed permanently, or alternatively, the standard lid may be replaced onto the toilet 102 after coupling the adapter plate 104 to the toilet 102 where it may remain in a lifted position in order to make room for the raised toilet seat 110. The adapter plate 104 may be oriented with the tips of the end sections 206a/b pointing toward the back (i.e., the water tank) of the toilet 102 as shown in Fig. 3A, or toward the front of the toilet as shown in Fig. 3B. In either orientation, the passages 208a/b are to be positioned over the respective holes 302a/b such that each passage 208a/b may receive, or otherwise fit about, a respective fastener 304a and 304b, such as a screw. Accordingly, each of the fasteners 304a/b may pass through the passages 208a/b and into the holes 302a/b where they may be fastened to the toilet 102 in the conventional manner known to a person having ordinary skill in the art. Alternatively, the adapter plate 104 may be coupled to the toilet 102 by simply sliding the adapter plate 104 between the standard toilet seat and the toilet bowl when the standard toilet seat is in a raised position such that the passages 208a/b fit about the fasteners 304a/b. In this way, the adapter plate 104 may be securely coupled to the toilet 102 to ensure stability of the raised toilet seat assembly 100 when in use. The holes 302a/b and the fasteners 304a/b are typically found on a conventional toilet, and are in-

tended for use in attaching a standard, hinged toilet seat thereto.

[0034] It is to be appreciated that the specific size and shape of the adapter plate 104 is not specific to the present invention, and it may therefore have any suitable shape. For example, the adapter plate 104 may have a shape other than a predominantly rectangular shape, as shown in Fig. 2, such as, but not limited to, a triangular, circular, elliptical, oblong shape, etc. So long as the adapter plate 104 is configured to receive a portion of the shoe 108 to couple thereto, and is further configured to couple to the toilet 102 in the manner described hereto, the adapter plate 104 may be of any suitable size and shape to enable this functionality. Additionally, although the adapter plate 104 is shown with two end sections 206a/b and two passages 208a/b, the adapter plate 104 may include a single end section and associated passage, or it may include more than two passages and associated end sections.

[0035] Referring now to Figs. 4A and 4B, an shoe 108 according to an example embodiment is shown in further detail, with Fig. 4A showing a perspective view of the shoe 108, and Fig. 4B showing a side view of the shoe 108. As illustrated, the shoe 108 comprises a flange member 402, or a first portion, configured to slide into the slot 204 of the adapter plate 104. The flange member 402 is shown in Fig. 4A to have a rectangular shape with a v-shaped cutout, but it is to be appreciated that the flange member 402 can be designed to have any suitable shape, such as rectangular, triangular, semicircular, etc. The flange member 402 is of a thickness such that it may be slid within the slot 204 of the adapter plate 104 when the adapter plate 104 is securely coupled to the toilet 102, as will be described further with reference to Fig. 5. The flange member 402 further comprises a tapered end 404 (shown in Fig. 4B) toward the end of the flange member 402. The tapered end 404 facilitates the engagement of the flange member 402 when it is slid into the slot 204 of the adapter plate 104 after the adapter plate 104 has been securely coupled to the toilet 102.

[0036] The shoe 108 further comprises a main body member 406, or a second portion, which is configured to slide into the rear portion of the raised toilet seat 112 (shown in Fig. 1) such that the shoe 108 acts as a connection point between the adapter plate 104 and the raised toilet seat 110. The main body member 406 is shown in Fig. 4A to have an arcuate curved side 408 which allows for a proper mating engagement between the shoe 108 and the rear portion of the raised toilet seat 112, the rear portion of the raised toilet seat 112 having the same, or similar, radius of curvature as that of the arcuate curved side 408.

[0037] Referring now to Fig. 5, the shoe 108 is shown to be coupled to the adapter plate 104. As illustrated in Fig. 5, after the adapter plate 104 has been securely coupled to the toilet 102 (as described with reference to Figs. 3A and 3B), a space is provided between the rear portion of the toilet 106 and the adapter plate 104 by virtue of

the slot 204 of the adapter plate 104. Accordingly, the shoe 108 may be slid into the slot 204 of the adapter plate 104 such that the flange member 402 of the shoe 108 slides within the slot 204 and into the space between the adapter plate 104 and the rear portion of the toilet 106. In this manner, the shoe 108 is securely coupled to the adapter plate 104, but is also detachable from the adapter plate 104 by applying an opposing force to slide the flange member 402 out from within the slot 204 of the adapter plate 104. Although the coupling between the adapter plate 104 and the shoe 108 is described in example embodiments as being an interference fit relation by sliding the flange member 402 within the slot 204, it is to be appreciated that other suitable coupling means comprising two complimentary components may be utilized without changing the basic characteristics of the system, such as, but not limited to, a tooth and groove mechanism, dovetail coupling, snaps, a hook-and-loop mechanism such as Velcro®, etc., or any other detachable coupling known in the art.

[0038] Referring now to Fig. 6, a side view of the raised toilet seat 110 is illustrated. The raised toilet seat is configured to rest on the toilet bowl of toilet 102 and comprises a rear portion 112 configured to receive the shoe 108 from the underside of the raised toilet seat 110, as will be described in more detail with reference to Figs. 7 and 8. The raised toilet seat 110 further comprises a top surface 602 which is contoured such that it provides a slightly inclined surface where a portion of the top surface 602 near the rear portion 112 is raised higher than the remainder of the top surface 602. The raised toilet seat 110 further comprises a bottom portion 604 that is smaller in diameter relative to the remaining portion of the raised toilet seat 110 such that the bottom portion 604 is configured to fit within the toilet bowl of the toilet 102.

[0039] Referring now to Fig. 7, the raised toilet seat assembly 100 is illustrated in its fully assembled form. As illustrated in Fig. 7, the raised toilet seat 110 may be coupled to the shoe 108, the details of which will be described in further detail with reference to Fig. 8. The raised toilet seat 110 is easily detachable from the shoe 108 by lifting upward on the raised toilet seat 110. While in use, however, the components of the raised toilet seat assembly 100 are securely coupled in fully assembled form and thereby provide a stable raised toilet seat assembly 100 for use by patrons.

[0040] Referring now to Fig. 8, the fully assembled raised toilet seat assembly 100 of Fig. 7 is shown from a side elevation view along section line A-A (illustrated in Fig. 7). Section line A-A bisects the toilet 102 and the raised toilet seat assembly 100. As illustrated in Fig. 8, the adapter plate 104 is coupled to the toilet 102 for example by tightening the fasteners 304a/b while the adapter plate 104 is positioned flat on the rear portion of the toilet 106 with the slot 204 facing downward and the passages 208a/b positioned over the holes 302a/b. The shoe 108 is shown to be coupled to the adapter plate 104 by sliding the flange member 402 into the slot 204 and into

the space between the adapter plate 104 and the rear portion of the toilet 106, as shown in the zoomed view of Fig. 8. Importantly, Fig. 8 illustrates how the shoe 108 is coupled to the rear portion of the raised toilet seat 112 by sliding the main body member 406 of the shoe 108 within a cavity 802, or recess, in the rear portion of the raised toilet seat 112 which is openly configured and accessible from the underside of the raised toilet seat 110. By virtue of the arcuate curved side 408 of the shoe 108 shown in Fig. 4A, the shoe 108 securely mates with the raised toilet seat 110 since the rear portion of the raised toilet seat 112 has a curvature at least similar to that of the arcuate curved side 408 of the shoe 108. In some embodiments, the coupling between the shoe 108 and the raised toilet seat 110 is by interference fit relation.

[0041] Although the present invention has been described in relation to particular embodiments thereof, many other variations and modifications and other uses will become apparent to those skilled in the art. Therefore, the present invention should be limited not by the specific disclosure herein, but only by the appended claims.

Claims

1. A raised toilet seat assembly comprising:

an adapter plate configured to couple to a toilet seat attachment point;
a shoe comprising a first portion and a second portion, the first portion of the shoe configured to couple to the adapter plate; and
a raised toilet seat having a forward portion and a rear portion, the raised toilet seat configured to couple to the second portion of the shoe at the rear portion of the raised toilet seat.

2. The raised toilet seat assembly of claim 1, wherein the adapter plate comprises a slot configured to receive the first portion of the shoe, and wherein the raised toilet seat further comprises a cavity configured to receive the second portion of the shoe.

3. The raised toilet seat assembly of claim 2, wherein the adapter plate further comprises a plurality of passages, each passage configured to fit about a fastener.

4. The raised toilet seat assembly of claim 3, wherein the adapter plate further comprises a plurality of end sections extending outwardly from the adapter plate, each end section adjacent at least one passage of the plurality of passages.

5. The raised toilet seat assembly of claim 2, wherein the second portion of the shoe comprises an arcuate side with a radius of curvature corresponding to a radius of curvature of a side of the cavity.

6. The raised toilet seat assembly of claim 2, wherein the first portion of the shoe is configured to slidably couple within the slot of the adapter plate, and wherein the second portion of the shoe is configured to slidably couple within the cavity of the raised toilet seat.

7. The raised toilet seat assembly of claim 6, wherein the coupling between the shoe and either of the adapter plate or the raised toilet seat is through an interference fit relation.

8. The raised toilet seat assembly of claim 6, wherein the first portion of the shoe comprises a flange having a tapered end.

9. The raised toilet seat assembly of claim 2, wherein the slot is an openly configured slot.

10. The raised toilet seat assembly of claim 9, wherein a width of the slot is smaller than a width of the first portion of the shoe.

11. The raised toilet seat assembly of claim 1, wherein at least one of the adapter plate, the shoe or the raised toilet seat is manufactured using an injection molding technique.

12. The raised toilet seat assembly of claim 1, wherein the adapter plate, the shoe and the raised toilet seat are made of plastic.

13. The raised toilet seat assembly of claim 1, wherein the raised toilet seat is configured to rest on a toilet bowl of a toilet.

14. The raised toilet seat assembly of claim 1, wherein the raised toilet seat further comprises an upper surface having an inclined contour.

15. The raised toilet seat assembly of claim 2, wherein the cavity is disposed on an underside of the rear portion of the raised toilet seat.

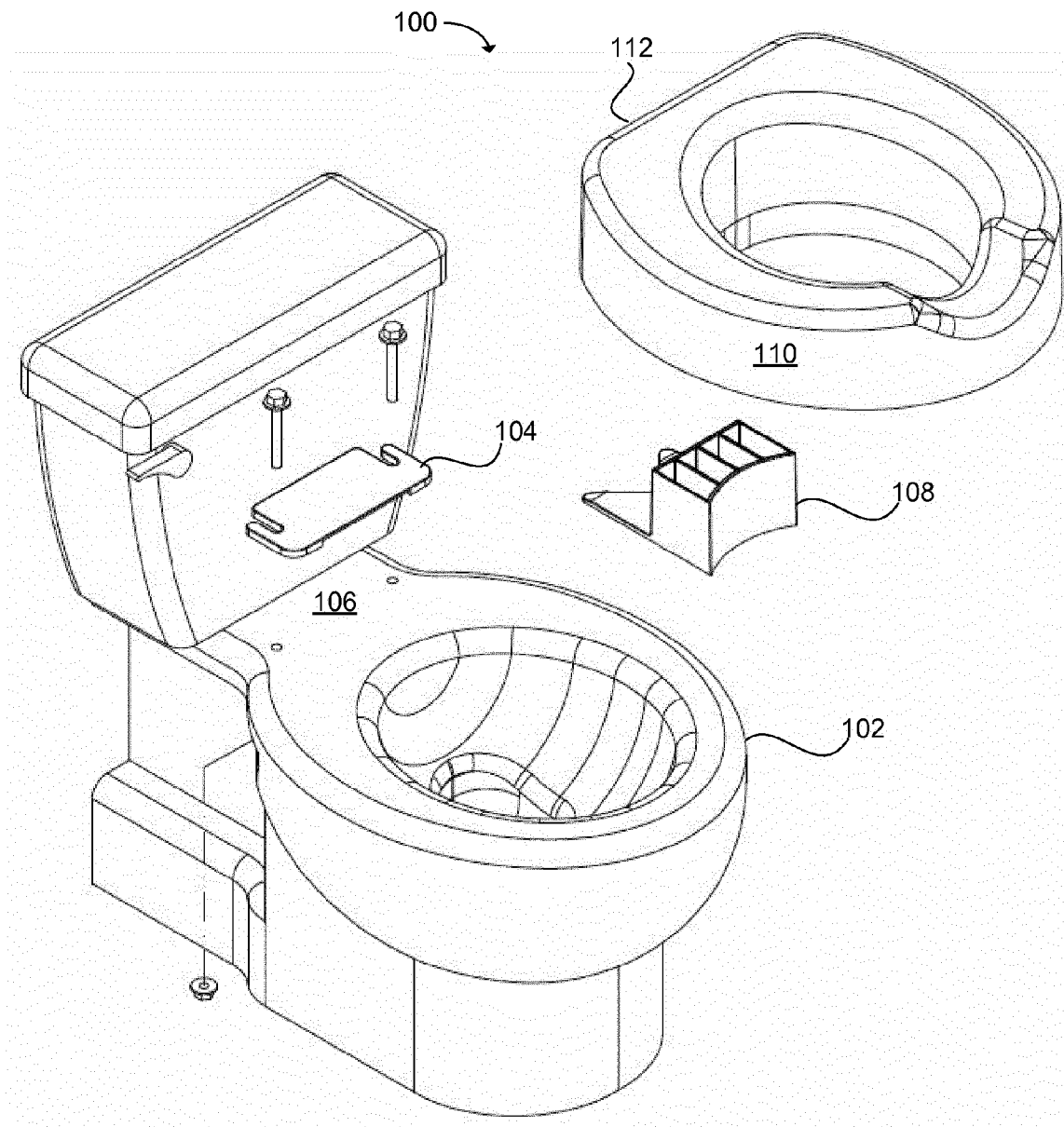


Fig. 1

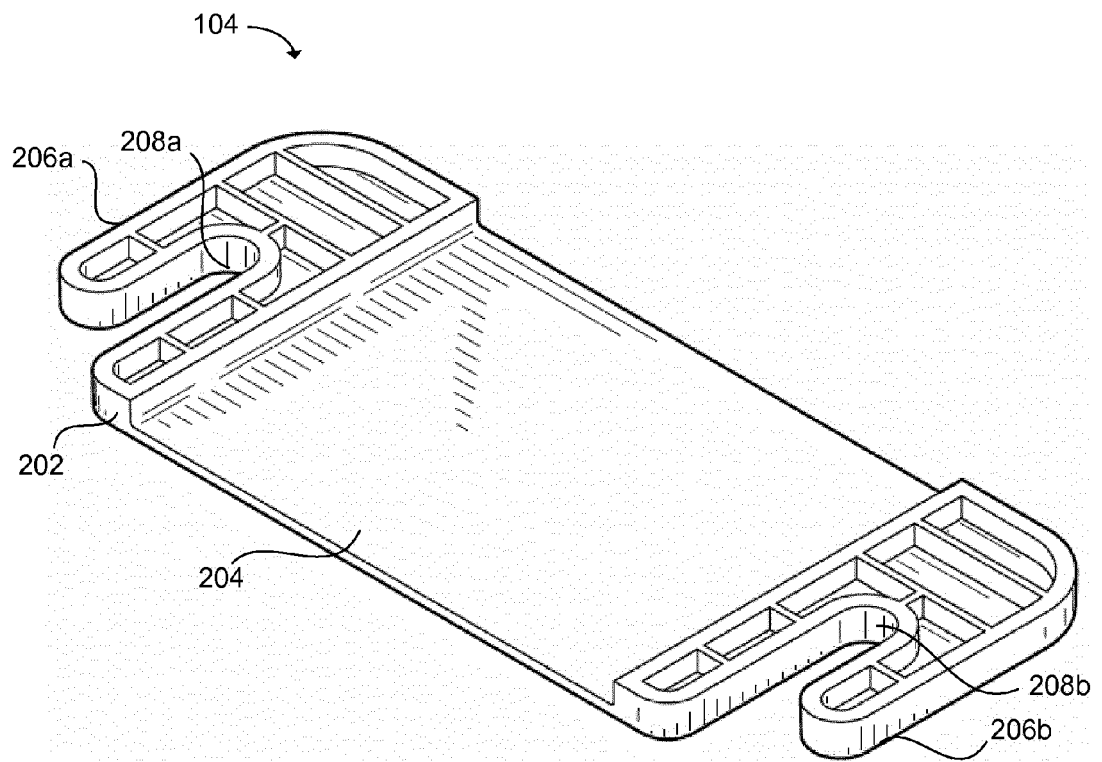


Fig. 2

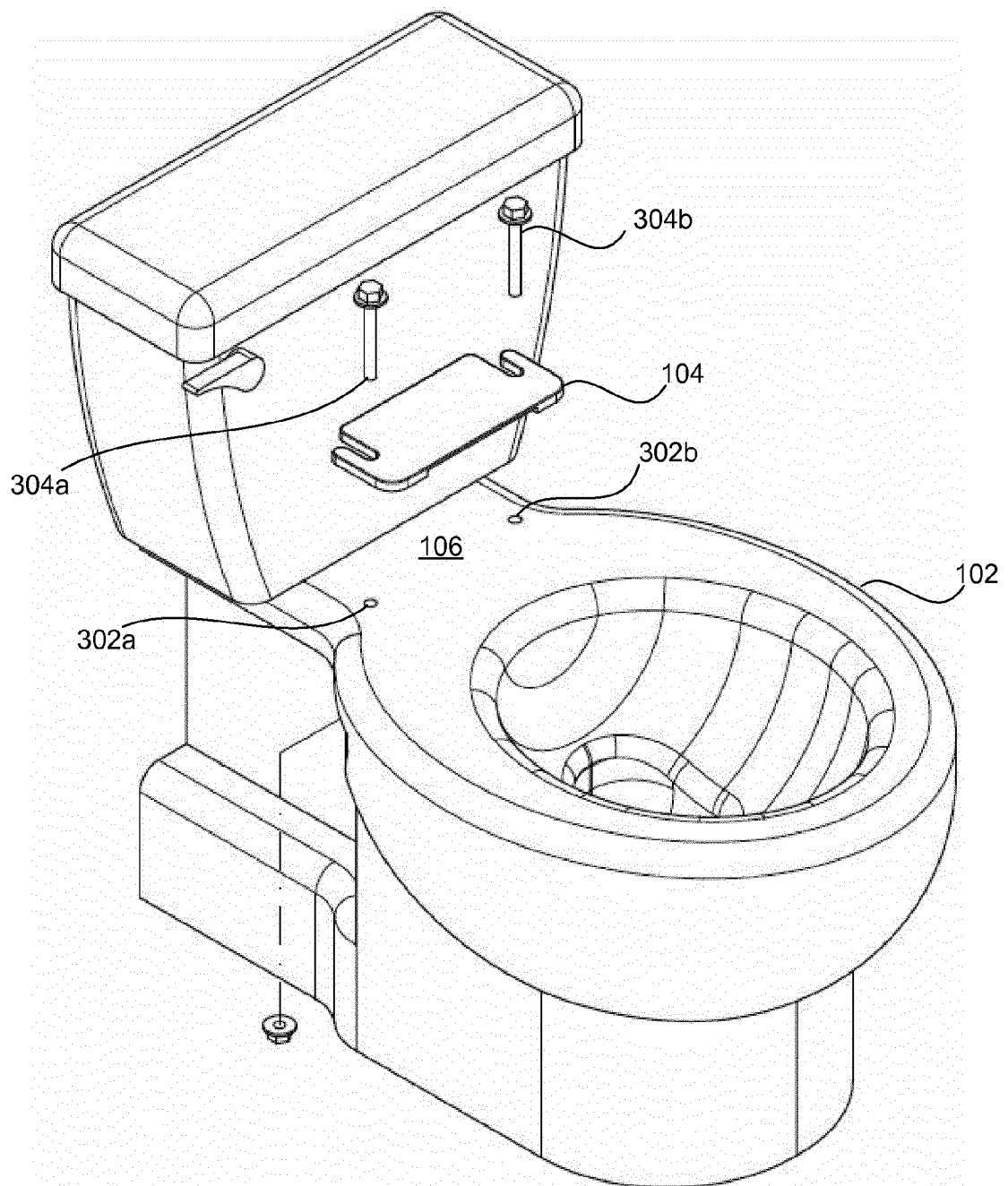


Fig. 3A

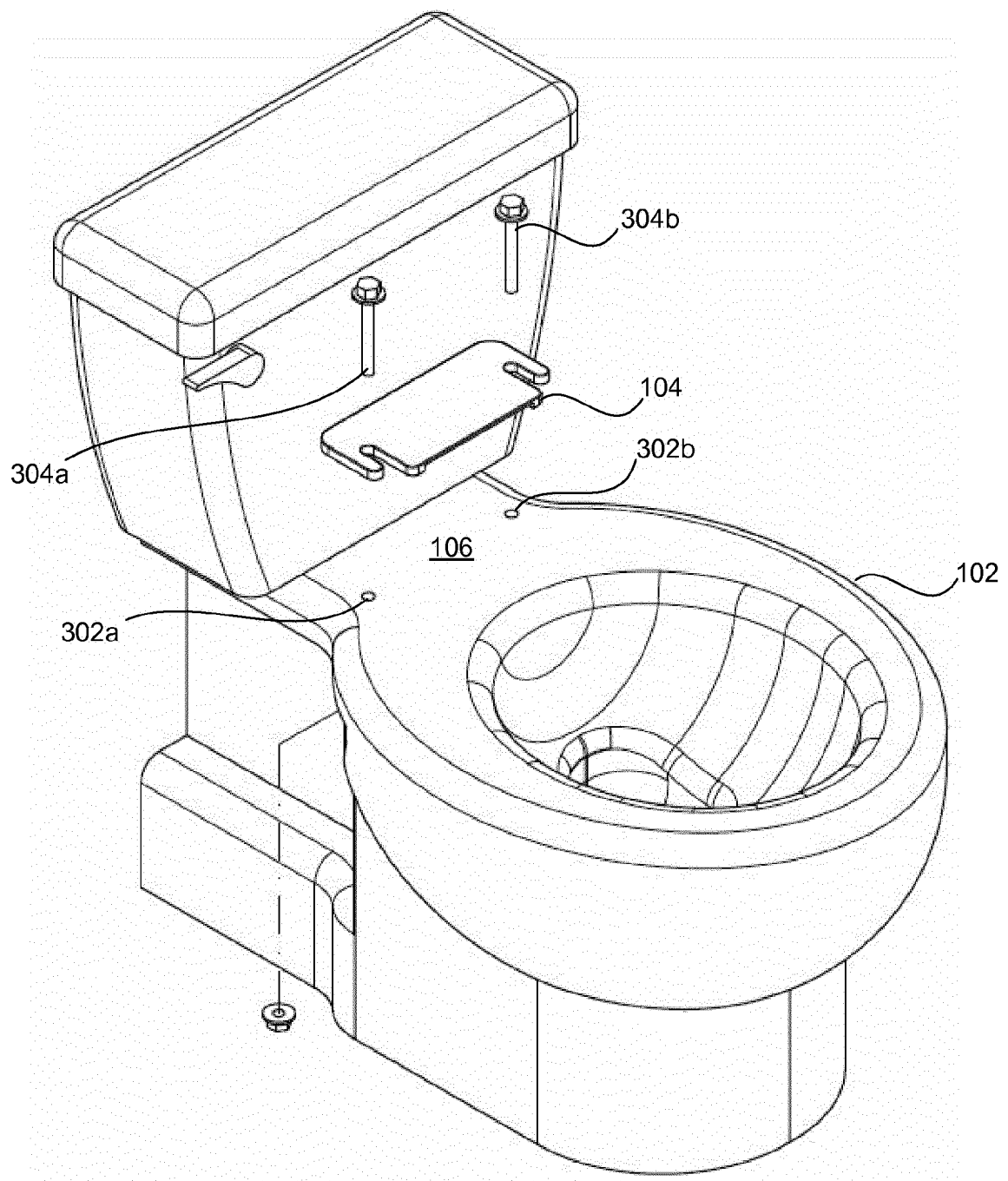


Fig. 3B

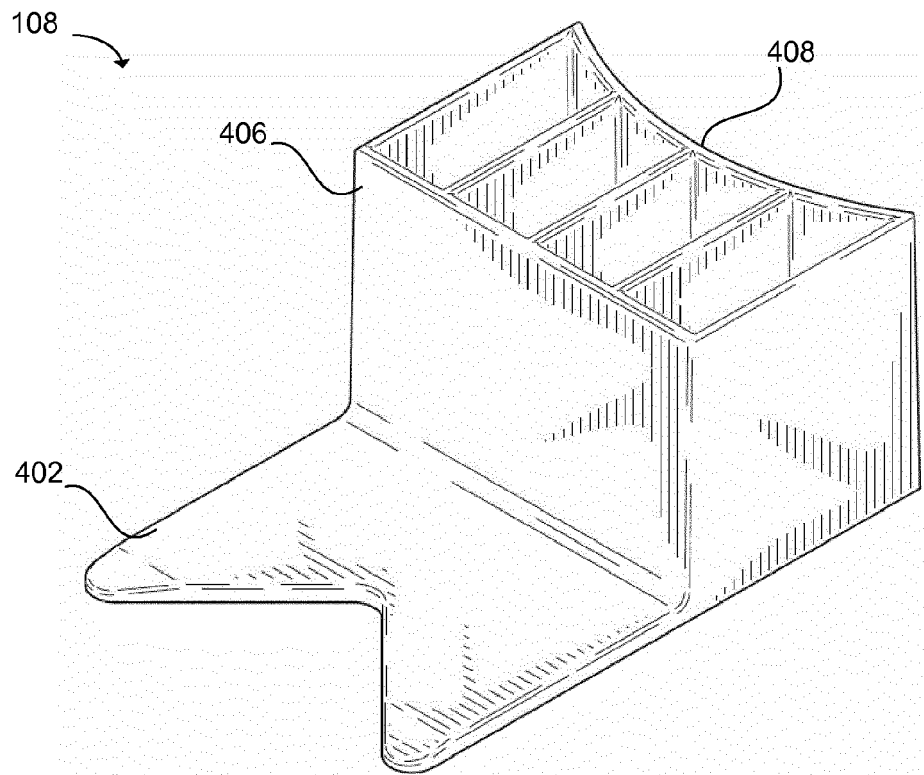


Fig. 4A

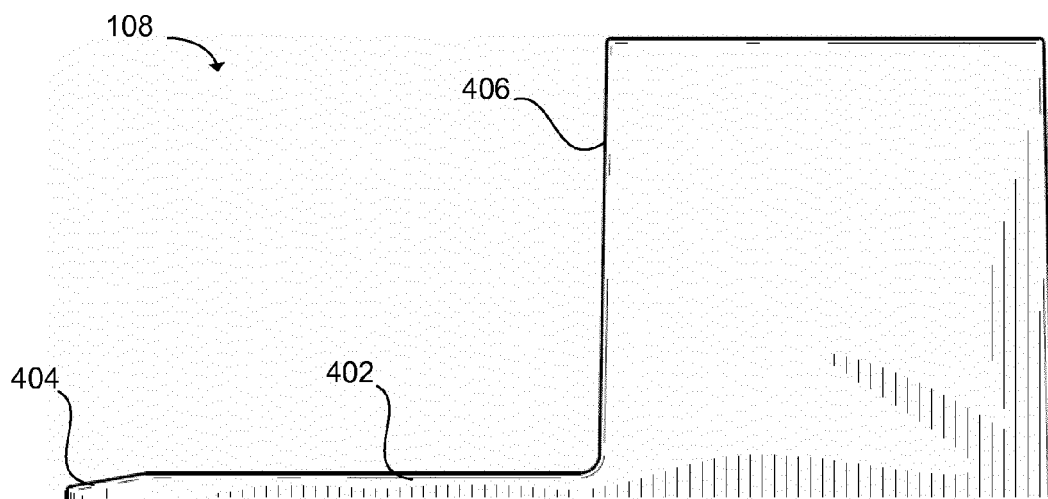


Fig. 4B

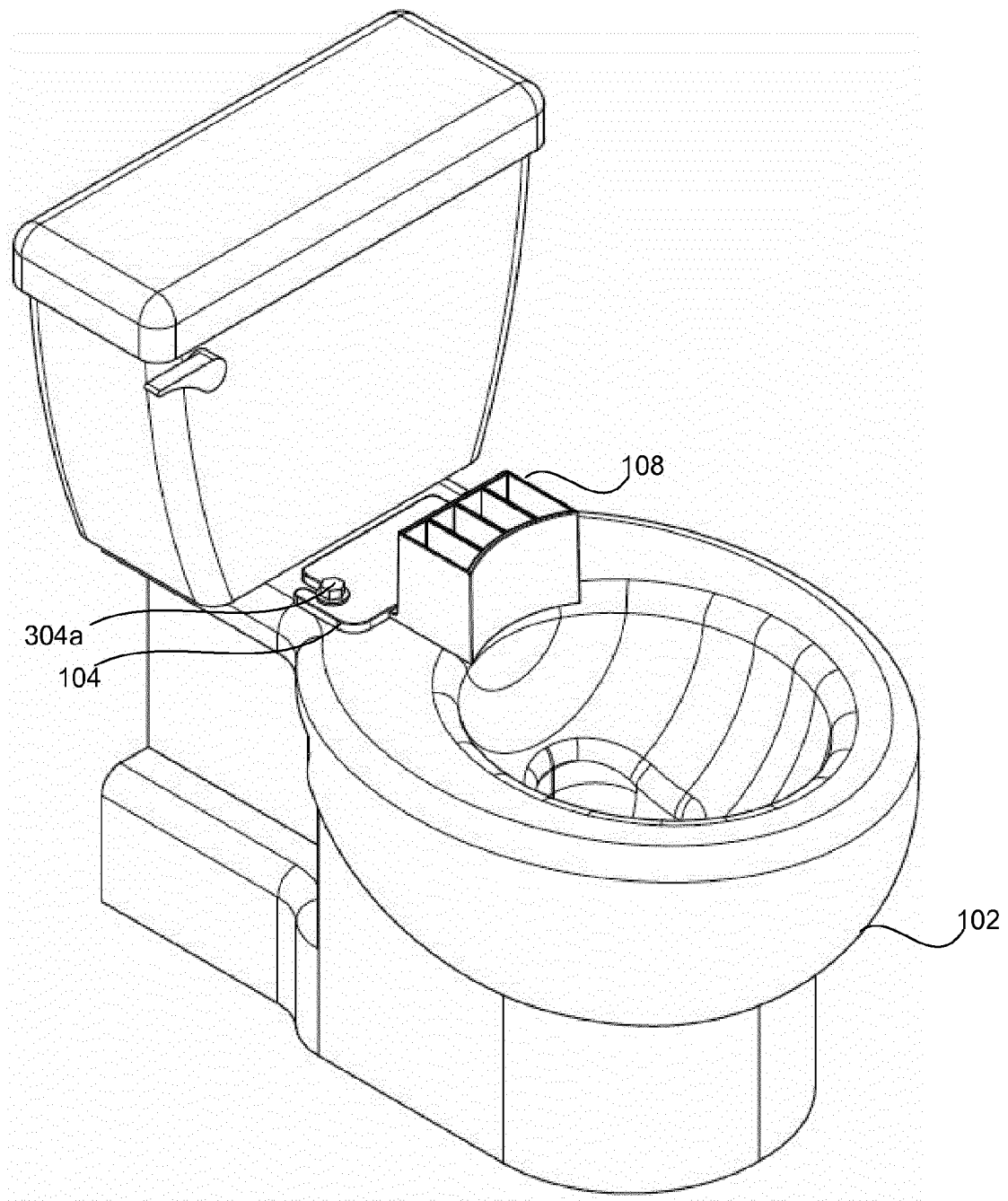


Fig. 5

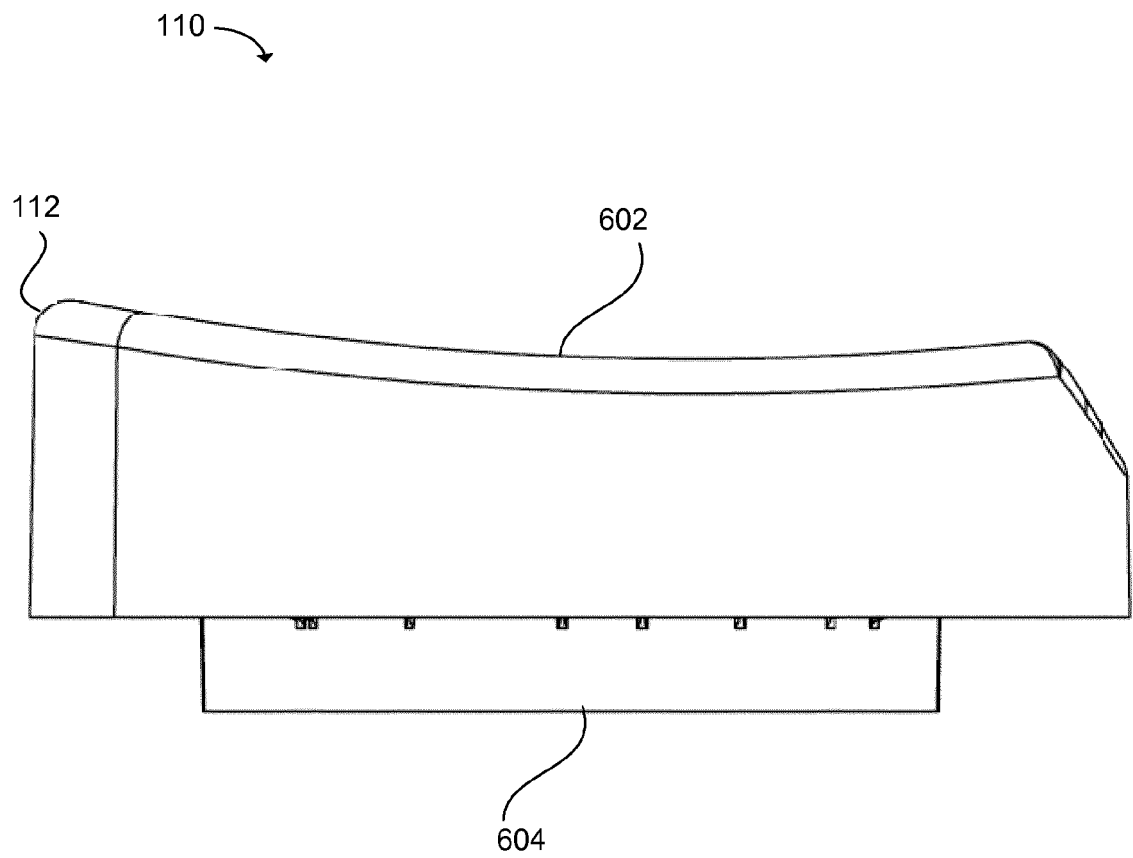


Fig. 6

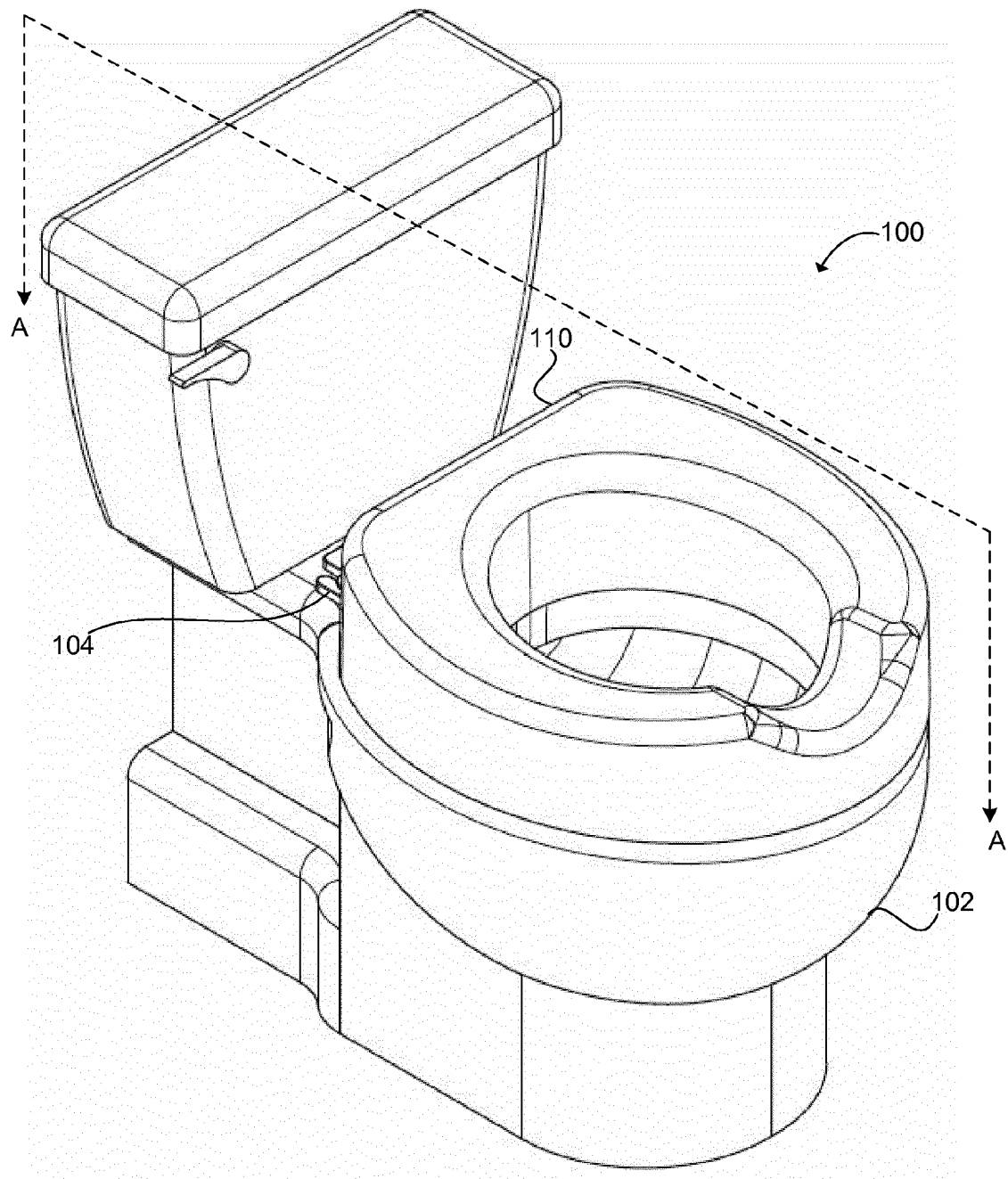
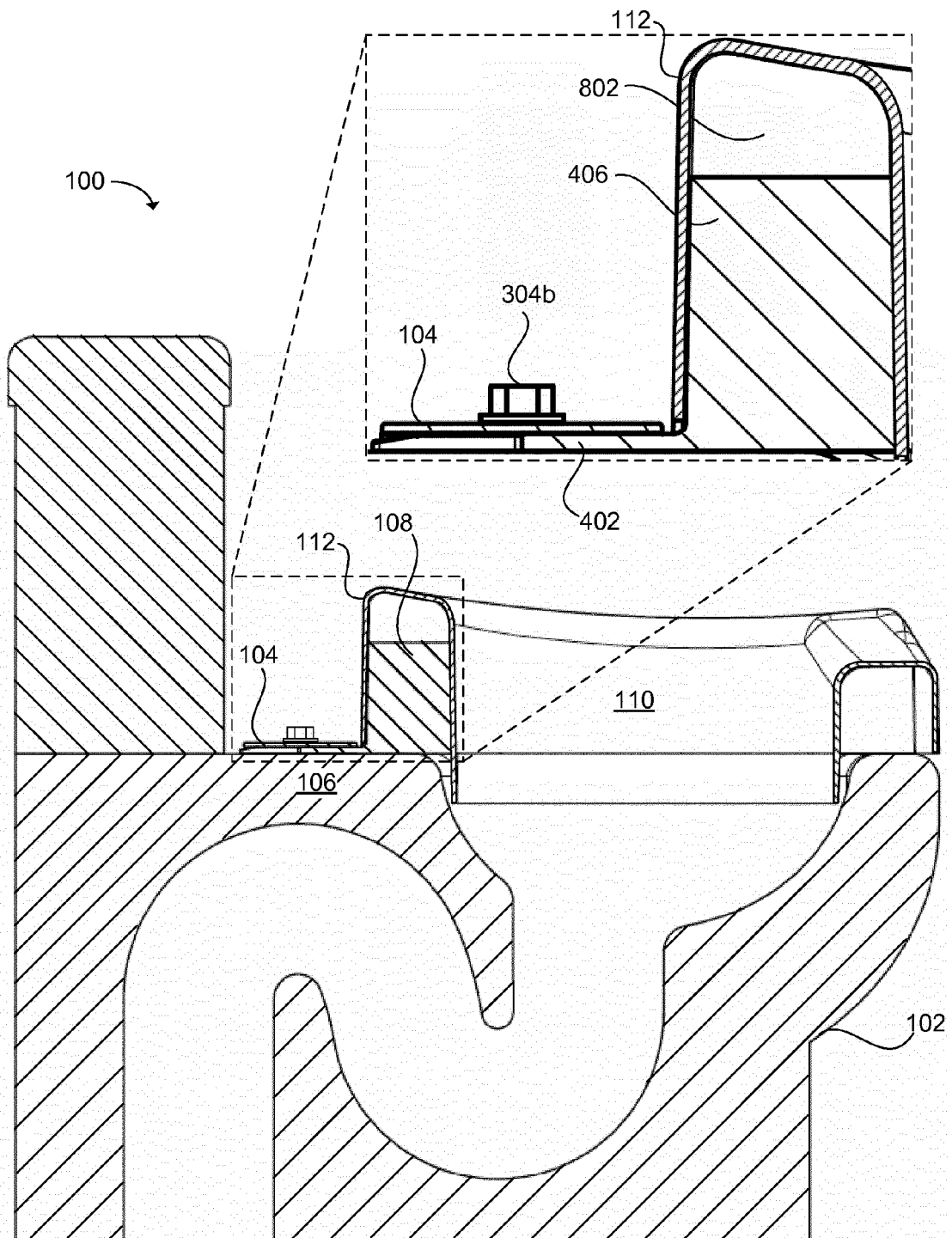


Fig. 7



Section A-A

Fig. 8



EUROPEAN SEARCH REPORT

Application Number
EP 13 18 7187

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	FR 2 612 390 A3 (PAG PRESSWERK AG [DE]) 23 September 1988 (1988-09-23)	1-4,7-14	INV.
Y	* page 4, line 16 - line 21; figure 1 *	5	A47K13/02
A	* page 1, line 1 - line 5 *	6	A47K13/26

X	CA 1 220 901 A1 (MADDAK INC) 28 April 1987 (1987-04-28)	1	
A	* figure fig. 10 *	8	

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Y	* figure fig. 4 *	5	
A	* page 4, line 9 - line 12 *	6,15	
	* page 6, paragraph 3 *		

A	US 4 214 323 A (THOMAS MORTON I [US]) 29 July 1980 (1980-07-29)	9	
	* figure fig. 4 *		

			TECHNICAL FIELDS SEARCHED (IPC)
			A47K
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		18 December 2013	Schikhof, Arnout
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.**

EP 13 18 7187

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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18-12-2013

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