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BATHTUB

Abstract

A bathtub includes a bathtub body, a face plate, a tray and a charging assembly. A shower cavity is arranged inside the bathtub body; the face plate surrounds a cavity opening of the shower cavity and is bent and connected with the bathtub body, and a charging groove is concavely provided towards an extending direction away from the cavity opening in the face plate; the tray is arranged on one side of the charging groove and fixedly connected to the face plate, and a bearing cavity is formed in the tray; and the charging assembly is arranged in the charging groove and detachably connected with the face plate, and the charging assembly is at least partially exposed from a groove opening of the charging groove.

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Background/Summary

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the benefit of Chinese Patent Application No. 202410179013.3 filed on Feb. 10, 2024, the contents of which are incorporated herein by reference in their entirety.

TECHNICAL FIELD

[0002] The present application belongs to the technical field of shower set, and more particularly, relates to a bathtub.

BACKGROUND

[0003] There are usually three ways for body cleaning, comprising shower bath, tub bath and sponge bath, and a user with self-care ability can choose according to his or her preference and need. However, a user without self-care ability, especially a child, usually takes the tub bath or the sponge bath under the help of the guardian to avoid possible safety hazards. According to a common form of the tub bath, a bathtub usually needs to be used to bear water for the tub bath, and after the child enters the bathtub, body cleaning and blood circulation promotion are realized at the same time during soaking in the water.

[0004] In the related art, the bathtub may be set as a portable type or an embedded type according to a mounting form. A bathtub of the embedded type is fixedly mounted on a wall or a counter top in a bathroom, which usually has high mounting and maintenance costs, a large occupied area and poor use flexibility; and a bathtub of the portable type is made of plastic, PVC, rubber or other materials, and is set in a detachable or foldable form, which does not need a professional mounting process, and has a small occupied area and relatively good use flexibility, so as to be gradually favored by consumers.

[0005] However, in order to improve the portability as much as possible, the bathtub of the portable type usually has a simple structure design, and cleaning tools used by the user during the tub bath cannot be well accommodated or placed. Moreover, with the development of the times, in order to further improve use experience, a user requirement for the use of a mobile phone, a humidifier, a heater, a hair dryer or other household appliances during the tub bath should be met. However, existing bathtubs cannot meet corresponding functional requirements, and the user needs to step out of the bathtub to get corresponding articles for use, so that an operation process is inconvenient.

SUMMARY

[0006] Embodiments of the present application are intended to provide a bathtub, which aims at improving the flexibility and convenience of the bathtub in a use process.

[0007] In order to achieve the above object, the present application provides a bathtub, which comprises a bathtub body, a face plate, a tray and a charging assembly, wherein a shower cavity is arranged inside the bathtub body; the face plate surrounds a cavity opening of the shower cavity and is bent and connected with the bathtub body, and a charging groove is concavely provided towards an extending direction away from the cavity opening in the face plate; the tray is arranged on one side of the charging groove and fixedly connected to the face plate, and a bearing cavity is formed in the tray; and the charging assembly is arranged in the charging groove and detachably connected with the face plate, and the charging assembly is at least partially exposed from a groove opening of the charging groove.

[0008] As a feasible embodiment, the charging assembly comprises a power supply device and a charging cable, wherein the power supply device is arranged in the charging groove; and one end of the charging cable is fixedly connected to the power supply device, and the other end of the charging cable telescopically moves in and out of the charging groove, so that a part of the charging cable is exposed from the groove opening of the charging groove.

[0009] As a feasible embodiment, the face plate is further provided with a mounting plate, a charging hole is formed in the mounting plate, the mounting plate at least partially covers the groove opening of the charging groove, the charging hole is communicated with the charging groove, and one end of the charging cable away from the power supply device telescopically moves in and out of the charging hole to enable the charging cable to be partially exposed from the groove opening of the charging groove.
[0010] As a feasible embodiment, a clamping groove is further formed in the mounting plate, the charging assembly further comprises a display screen, the display screen is clamped with the clamping groove and electrically connected with the power supply device, and at least a part of a wall surface of the display screen is exposed from a groove opening of the clamping groove.
[0011] As a feasible embodiment, a first anti-slip portion is convexly provided on a bottom wall surface of the bearing cavity.
[0012] As a feasible embodiment, a second anti-slip portion is convexly provided on a bottom wall surface of the shower cavity.
[0013] As a feasible embodiment, a supporting groove is concavely provided towards the shower cavity in a periphery of one side of the face plate away from the charging groove, the supporting groove and the tray are oppositely arranged on two sides of the charging groove, and an inner wall surface of the supporting groove is arranged in a smooth transition.
[0014] As a feasible embodiment, a hanging hole is further formed in the face plate, the hanging hole and the charging groove are oppositely arranged on two sides of the bathtub body, and the hanging hole penetrates through the face plate.
[0015] As a feasible embodiment, the bathtub body comprises a bottom plate, an end plate, and an annular bathtub wall connected between the bottom plate and the end plate, the face plate is bent and connected with one side of the end plate away from the annular bathtub wall, and the annular bathtub wall has a storage state in which the bottom plate at least partially extends into the end plate by folding, and an expansion state in which the bottom plate, the end plate and the annular bathtub wall are enclosed to form the shower cavity.
[0016] As a feasible embodiment, the bathtub further comprises a supporting assembly, the supporting assembly comprises a plurality of supporting rods, and the supporting rods are hinged with the end plate, so as to be at least partially exposed from one side of the bottom plate away from the annular bathtub wall in the expansion state.
[0017] Compared with the prior art, the bathtub provided by the embodiments of the present application has the beneficial effects as follows: [0018] the face plate is bent on the bathtub body, the charging groove recessed in the face plate is used for bearing the charging assembly, and the tray is correspondingly arranged on one side of the charging groove, so that a user may put a mobile phone and other electrical appliances on the tray during the use of the bathtub, and the charging assembly correspondingly provides electric energy for a mobile phone and other electrical appliances for normal operation, thus further improving the use flexibility and convenience of the bathtub.

Description

BRIEF DESCRIPTION OF THE DRAWINGS
[0019] In order to more clearly illustrate the technical solutions of the embodiments of the present application, the drawings that are required to describe the embodiments or the prior art will be briefly introduced below. Apparently, the drawings that are described below are only some embodiments of the present application, and those of ordinary skills in the art can obtain other drawings according to these drawings without going through any creative work.
[0020] FIG. **1** is a first schematic three-dimensional structure diagram of a bathtub provided by an

embodiment of the present application;
[0021] FIG. **2** is a second schematic three-dimensional structure diagram of the bathtub provided by the embodiment of the present application from another perspective;
[0022] FIG. **3** is a top structure view of the bathtub provided by the embodiment of the present application;
[0023] FIG. **4** is a bottom structure view of the bathtub provided by the embodiment of the present application;
[0024] FIG. **5** is a side structure view of the bathtub provided by the embodiment of the present application;
[0025] FIG. **6** is a schematic three-dimensional structure diagram of a bathtub provided by another embodiment of the present application;
[0026] FIG. **7** is an enlarged view of a structure at a part A in FIG. **6**;
[0027] FIG. **8** is a schematic three-dimensional structure diagram of a bathtub provided by another embodiment of the present application when a shielding assembly of the bathtub is in an expansion state;
[0028] FIG. **9** is an enlarged view of a structure at a part B in FIG. **8**;
[0029] FIG. **10** is a schematic diagram of a sectioning structure of the shielding assembly provided by the embodiment of the present application;
[0030] FIG. **11** is an enlarged view of a structure at a part C in FIG. **10**; and
[0031] FIG. **12** is an enlarged view of a structure at a part D in FIG. **11**.

REFERENCE NUMERALS IN THE DRAWINGS ARE AS FOLLOWS

[0032] **100** refers to bathtub; **10** refers to bathtub body; **11** refers to shower cavity; **13** refers to second anti-slip portion; **15** refers to bottom plate; **16** refers to end plate; **17** refers to annular bathtub wall; **30** refers to face plate; **31** refers to charging groove; **32** refers to shielding assembly; **321** refers to supporting rod; **322** refers to shielding portion; **323** refers to end portion; **324** refers to rotating base; **01** refers to gap; **33** refers to mounting plate; **34** refers to charging hole; **35** refers to clamping groove; **37** refers to supporting groove; **38** refers to magnetic member; **39** refers to hanging hole; **50** refers to tray; **51** refers to bearing cavity; **53** refers to first anti-slip portion; **70** refers to supporting assembly; and **71** refers to supporting rod.

DETAILED DESCRIPTION

[0033] To make the technical problems to be solved, technical solutions, and beneficial effects of the present application clearer, the present application will be further explained in detail with reference to the drawings and embodiments. It should be understood that the specific embodiments described herein are merely illustrative of the present application and are not intended to limit the present application.
[0034] It should be noted that all directional indicators (such as up, down, left, right, front, back, and the like) in the embodiments, are only used to explain the relative positional relationships and movement situations between components in a certain posture (as shown in the attached drawings). If the specific posture changes, the directional indicators will also change accordingly.
[0035] In the present invention, unless otherwise specified and limited, terms such as “connection” and “fixation”, etc., should be understood broadly, for example, the “connection” may be fixed connection, or detachable connection or integral connection; may be mechanical connection, and may also be electrical connection; and may be direct connection, may also be indirect connection through an intermediate medium, and may also be internal communication of two elements or interaction relationship of two elements, unless otherwise explicitly defined. The specific meaning of the above terms in the present invention can be understood in a specific case by those of ordinary skills in the art.
[0036] In addition, the descriptions related to “first”, “second”, etc. in the present invention are used for descriptive purposes only and cannot be understood as indicating or implying relative importance, or implicitly indicating the number of technical features indicated thereby. Therefore,

the features defined with “first” and “second” can explicitly or implicitly comprise at least one of the features. In addition, “and/or” appearing in the whole text means three parallel solutions, for example, “A and/or B” means the solution that A satisfies, the solution that B satisfies or the solution that A and B satisfy at the same time. In addition, the technical solutions of various embodiments may be combined with each other, but have to be based on what those having ordinary skills in the art can achieve. When the combination of the technical solutions is contradictory or impossible to realize, it should be considered that the combination of such technical solutions does not exist and is not within the scope of protection required by the present invention.

[0037] There are usually three ways for body cleaning, comprising shower bath, tub bath and sponge bath, and a user with self-care ability can choose according to his or her preference and need. However, a user without self-care ability, especially a child, usually takes the tub bath or the sponge bath under the help of the guardian to avoid possible safety hazards. According to a common form of the tub bath, a bathtub usually needs to be used to bear water for the tub bath, and after the child enters the bathtub, body cleaning and blood circulation promotion are realized at the same time during soaking in the water.

[0038] In the related art, the bathtub may be set as a portable type or an embedded type according to a mounting form. A bathtub of the embedded type is fixedly mounted on a wall or a counter top in a bathroom, which usually has high mounting and maintenance costs, a large occupied area and poor use flexibility; and a bathtub of the portable type is made of plastic, PVC, rubber or other materials, and is set in a detachable or foldable form, which does not need a professional mounting process, and has a small occupied area and relatively good use flexibility, so as to be gradually favored by consumers.

[0039] However, in order to improve the portability as much as possible, the bathtub of the portable type usually has a simple structure design, and cleaning tools used by the user during the tub bath cannot be well accommodated or placed. Moreover, with the development of the times, in order to further improve use experience, a user requirement for the use of a mobile phone, a humidifier, a heater, a hair dryer or other household appliances during the tub bath should be met. However, existing bathtubs cannot meet corresponding functional requirements, and the user needs to step out of the bathtub to get corresponding articles for use, so that an operation process is inconvenient.

[0040] Embodiments of the present application are intended to provide a bathtub, which aims at improving the defects in the prior art above, thus further improving flexibility and convenience of the bathtub.

[0041] With reference to FIG. **1** to FIG. **5**, a bathtub provided by the embodiment of the present application will be described in detail hereinafter through specific embodiments.

[0042] With reference to FIG. **1** to FIG. **5** together, FIG. **1** is a first schematic three-dimensional structure diagram of the bathtub provided by the embodiment of the present application; FIG. **2** is a second schematic three-dimensional structure diagram of the bathtub provided by the embodiment of the present application from another perspective; FIG. **3** is a top structure view of the bathtub provided by the embodiment of the present application; FIG. **4** is a bottom structure view of the bathtub provided by the embodiment of the present application; and FIG. **5** is a side structure view of the bathtub provided by the embodiment of the present application. One embodiment of the present invention provides a bathtub **100**, which comprises a bathtub body **10**, a face plate **30**, a tray **50** and a charging assembly, wherein a shower cavity **11** is arranged inside the bathtub body **10**; the face plate **30** surrounds a cavity opening of the shower cavity **11** and is bent and connected with the bathtub body **10**, and a charging groove **31** is concavely provided towards an extending direction away from the cavity opening in the face plate **30**; the tray **50** is arranged on one side of the charging groove **31** and fixedly connected to the face plate **30**, and a bearing cavity **51** is formed in the tray **50**; and the charging assembly is arranged in the charging groove **31** and detachably connected with the face plate **30**, and the charging assembly is at least partially exposed

from a groove opening of the charging groove **31**.

[0043] It can be understood that the bathtub body **10** is used for forming the shower cavity **11**, and water needed by a user during the use of the bathtub **100** is borne by the shower cavity **11** in use. Specifically, the shower cavity may be a groove-shaped open-type cavity body with an opening oriented to one side, and the user puts at least a part of his or her body into the water contained in the shower cavity **11** from the cavity opening of the groove-shaped shower cavity **11** for tub bath. The face plate **30** surrounding the cavity opening of the shower cavity **11** is used for bearing and connecting the tray **50** and other parts or assemblies of the bathtub **100**, and making these parts have relatively fixed positional relationships with the bathtub body **10** provided with the shower cavity **11**, thus ensuring stable operation of various parts, that is, further improving the working stability of the bathtub **100**. The bathtub body **10** may be made of PVC (polyvinyl chloride), rubber, polyester fiber or other materials that are lightweight but waterproof and convenient to clean, which will not be specifically limited in the present application. Further, the face plate **30** bent and connected with the bathtub body **10** may be made of the same material as the bathtub body **10**, so that the bathtub body **10** and the face plate **30** made of the same material may be integrally formed by injection molding. Compared with a method of setting different materials and realizing bending and connection by welding, inserting or bonding, the method of injection molding further improves production efficiency of the bathtub **100**, simplifies a production process and reduces a production cost.

[0044] It can be understood that the charging groove **31** arranged towards the extending direction away from of the cavity opening in the face plate **30** has the same extending direction as the cavity opening of the shower cavity **11**, so that it is ensured that an exposure direction of the charging assembly (not shown in the drawings) arranged in the charging groove **31** and at least partially exposed from the groove opening of the charging groove **31** is close to the cavity opening of the shower cavity **11**, that is, it is ensured that, when the user is in the shower cavity **11** during the working of the bathtub **100**, the user is relatively closer to the groove opening of the charging groove **31**, that is, the user can approach the groove opening of the charging groove **31** conveniently, or approach the tray **50** arranged on one side of the charging groove **31**, thus further improving the use convenience of the bathtub **100**. The charging assembly is used for providing power output for a mobile phone, a humidifier, a hair dryer, and the like possibly appearing in a usage scene and ensuring stable operation of these appliances. The charging groove **31** is arranged to accommodate the charging assembly, at least a part of a wall surface of the charging groove **31** is used for blocking an external interference, that is, an influence of water droplets of the water in the shower cavity **11** possibly splashing towards the charging assembly during the working of the bathtub **100** on the charging assembly is avoided, thus further improving the working stability of the bathtub **100**.

[0045] It should be noted that the bearing cavity **51** is formed in the tray **50** fixedly connected to the face plate **30**, and the bearing cavity **51** may extend towards a direction away from a joint between the tray **50** and the face plate **30**, so that the bearing cavity **51** has the same extending direction as the charging groove **31** and the shower cavity **11**. When the user is in the shower cavity **11**, the user is close to the groove opening of the charging groove **31** and the cavity opening of the bearing cavity **51**, and when the bearing cavity **51** is used for accommodating tools or articles needed for tub bath, the user can temporarily place the tools or articles in the bearing cavity **51** only by moving a short distance, without needing other actions, or a part of the charging assembly in the charging groove **31** exposed from one side of the charging groove **31** directly provides a working power supply to a mobile phone, a hair dryer and the like in the tray **50**, thus further improving use convenience of the bathtub by the user. Preferably, the bathtub body **10**, the face plate **30** and the tray **50** may be integrally formed by injection molding, so that overall strengths between the bathtub body **10** and the face plate **30** and between the face plate **30** and the tray **50** are further increased. Therefore, when the bathtub body **10** bears a weight of the water or the user, the

possibility that an impact or vibration on the bathtub body **10** affects a working effect of tub bath is avoided, thus further improving the working stability of the bathtub **100**.

[0046] As a feasible embodiment, the charging assembly comprises a power supply device and a charging cable, wherein the power supply device is arranged in the charging groove **31**; and one end of the charging cable is fixedly connected to the power supply device, and the other end of the charging cable telescopically moves in and out of the charging groove **31**, so that a part of the charging cable is exposed from the groove opening of the charging groove **31**.

[0047] It can be understood that the power supply device is used for delivering a power supply to the outside, and the power supply device (not shown in the drawings) is completely located in the charging groove **31**, which can avoid a possible influence of dust, droplets or other external factors on a working process of the power supply device, thus further improving the working stability of the bathtub **100**. As a medium for the power supply device to provide the power supply to the outside, the charging cable (not shown in the drawings) is usually linear and has two opposite ends. One end of the charging cable is fixedly connected to the power supply device and electrically connected with the power supply device to acquire electric energy generated by the power supply device. Oppositely, the electric energy is transmitted in a circuit arranged in the charging cable to the other end of the charging cable which telescopically moves in and out of the charging groove **31**. Specifically, during the use of the bathtub **100**, the user may electrically connect one end of the charging cable exposed from the groove opening of the charging groove **31** with a mobile phone, a hair dryer and other appliances, so as to supply power to appliances to be used, thus further improving the use flexibility of the bathtub **100**.

[0048] As a feasible embodiment, the face plate **30** is further provided with a mounting plate **33**, a charging hole **34** is formed in the mounting plate **33**, the mounting plate **33** at least partially covers the groove opening of the charging groove **31**, the charging hole **34** is communicated with the charging groove **31**, and one end of the charging cable away from the power supply device telescopically moves in and out of the charging hole **34** to enable the charging cable to be partially exposed from the groove opening of the charging groove **31**.

[0049] It can be understood that the mounting plate **33** at least partially covering the groove opening of the charging groove **31** reduces the possibility that the charging groove **31** and the charging assembly arranged in the charging groove **31** are in contact with an external environment, and a part of the mounting plate **33** covering the groove opening of the charging groove **31** eliminates the possibility that dust, droplets and other external factors enter the charging groove **31** and affect the charging assembly, thus further improving the working stability of the face plate **30** and the bathtub **100**. Preferably, the charging hole **34** is additionally arranged in the mounting plate **33** for one end of the charging cable away from the power supply device to telescopically move in and out, and a shape and a size of the charging hole **34** correspond to a cross-sectional size of the charging cable, so that it is ensured that the charging cable is telescopic through the charging hole **34** to be accommodated in the charging grove **31** or exposed from the groove opening of the charging groove **31** for the user to use while eliminating the possibility that dust, droplets and other external factors may enter the charging groove **31** from the groove opening of the charging groove **31** and affect the charging assembly. That is, the mounting plate **33** protects the charging cable while not affecting power supply of the charging cable to the appliances needed by the user, thus further improving the working flexibility and service life of the bathtub **100**.

[0050] As a feasible embodiment, a clamping groove **35** is further formed in the mounting plate **33**, the charging assembly further comprises a display screen, the display screen is clamped with the clamping groove **35** and electrically connected with the power supply device, and at least a part of a wall surface of the display screen is exposed from a groove opening of the clamping groove **35**.

[0051] It can be understood that the display screen, as a common interaction way between the user and the circuit in the art, is used for representing an internal working state of the power supply device and possible monitoring data for the water in the shower cavity **11** or the bathtub **100**. For

example, a sensor for detecting a temperature or a flow rate of the water in the shower cavity **11** is additionally arranged in the charging assembly, and after required data are collected, the data are processed by the power supply device and then transmitted to the display screen (not shown in the drawings) to be presented to the user in a form distinguishable by naked eyes. Therefore, the charging cable exposed from the charging hole **34**, the tray **50** and the display screen are all arranged on the same side of the bathtub body **10**, which further ensures that the user may place the appliances, supply power to the appliances and acquire the monitoring data in the bathtub **100** in real time without an excessive turning or moving action during the use of the bathtub **100**, that is, the use flexibility of the bathtub **100** is further improved while enhancing the user experience.

[0052] As a feasible embodiment, as shown in FIG. **6**, FIG. **7**, FIG. **8** and FIG. **9**, the bathtub further comprises a shielding assembly **32**, wherein the shielding assembly **32** is arranged at an edge of an opening end of the charging groove **31**, and the shielding assembly **32** may cover the opening end of the charging groove **32**, so that faults such as short circuit caused by water splashing into the charging groove during the use of the bathtub can be avoided, thus improving the safety of the bathtub.

[0053] As a feasible embodiment, as shown in FIG. **8**, FIG. **9**, FIG. **10** and FIG. **11**, the shielding assembly **32** comprises a shielding portion **322**, an end portion **323** and a rotating base **324**, wherein the rotating base **324** is arranged at the edge of the opening end of the charging groove **31**, the rotating base **324** may be integrally formed with the face plate **31** or the mounting plate **33**, or may be fixed to the face plate **30** by welding, clamping, bonding, and the like, two ends of the end portion **323** are rotatably connected with the rotating base **324**, one end of the shielding portion is connected to one side of the charging groove **31** close to the shower cavity, and the other end of the shielding portion is connected to the end portion **323** and may rotate along with the end portion **323**. It should be noted that a middle portion of the end portion **323** is attached to the edge of the charging groove **31** and coincides with a contour of the edge of the charging groove **31**, so as to drive the shielding portion **322** to rotate and cover the opening end of the charging groove **31**, thus achieving the purpose of shielding droplets and other splashing objects. The shielding portion **322** may be made of a flexible sheet material capable of being expanded and contracted, such as plastic cloth and a rubber film, so as to shield droplets and other liquid or solid substances.

[0054] It can be understood that the end portion **323** is rotated when the charging groove **31** needs to be shielded, so that the end portion **323** is rotated to the other side of the charging groove **31**. At this time, the end portion **323** drives the shielding portion **322** to cover the charging groove **31**, which can effectively prevent the water from entering the charging groove **31**, thus improving the safety of the bathtub in use. When the shielding assembly **32** is not used, the shielding portion **322** is pressed between the end portion **323** and the opening edge of the charging groove **31** by folding and/or contracting, and according to such design, the shielding assembly **32** will not occupy too much space of the face plate **30**, which simplifies an external contour structure of the face plate **30** while facilitating accommodation of the shielding assembly **32**.

[0055] As a feasible embodiment, as shown in FIG. **8**, FIG. **9**, FIG. **10** and FIG. **11**, the shielding assembly **32** further comprises a supporting rod **321**, wherein the supporting rod **321** is arranged in a middle portion of the shielding portion **322**, so as to support the shielding portion **322** after the shielding portion **322** is expanded, so that a cavity is formed on one side of the shielding portion **322** close to the charging groove **31**, which may provide a larger accommodating space for the charging assembly **32** inside the charging groove **31** while enhancing a strength of the shielding portion **322**.

[0056] It can be understood that the supporting rod **324** may be made of a steel wire, a plastic rod, and other materials with good elasticity. When the shielding portion **322** is made of the plastic cloth, the rubber film and other relatively flexible materials, the shielding portion itself does not have the ability to support its own shape, and a plurality of supporting rods **322** are arranged in the middle portion of the shielding portion by sewing, bonding, sleeving, and the like, which can play a

good role in supporting the middle portion of the shielding portion, so as to completely expanding the shielding portion **322**, thus being more convenient for shielding droplets and other splashing objects for the charging groove **31**.

[0057] As a feasible embodiment, as shown in FIG. **10**, FIG. **11** and FIG. **12**, the bathtub further comprises a magnetic member **38**, and the end portion **323** is made of magnetic metal. The magnetic member **38** is arranged at the edge of the opening end of the charging groove **31** and protrudes from a surface of the edge of the opening end of the charging groove **31**, so as to attract and fix the end portion **323** and hold the end portion in a proper place after the shielding portion **322** is expanded.

[0058] It can be understood that, after the end portion **323** drives the shielding portion **322** to be expanded, because the shielding portion **322** may be made of the plastic cloth, the rubber film and other elastic materials, the shielding portion **322** may have a certain tension after being expanded, which may affect the stability of an expansion state after the shielding portion is expanded. After the shielding portion is expanded, the end portion **323** is attracted and fixed in an expansion position by the magnetic member **38**, so that the shielding portion **322** may be prevented from contracting due to the tension, thus improving the stability of the shielding assembly **32** in the expansion state, and further improving a shielding effect of the shielding assembly on droplets and other splashing objects. With reference to FIG. **12**, after the magnetic member **38** attracts and holds the end portion **323**, because the magnetic member **38** protrudes from the surface of the edge of the opening end of the charging groove **31**, there is a certain gap **01** between the end portion **323** and the edge of the opening end of the charging groove **31**, and the gap **01** may be used for various power circuits to pass through.

[0059] As a feasible embodiment, a first anti-slip portion **53** is convexly provided on a bottom wall surface of the bearing cavity **51**.

[0060] It can be understood that, during the working of the bathtub **100**, the appliances placed in the bearing cavity **51** are supported by the bottom wall surface of the bearing cavity **51** under the influence of gravity to be fixed. However, the water contained in the shower cavity **11** may generate splashing droplets when the user enters the water or takes the tub bath, the splashing droplets may enter the bearing cavity **51** and converge towards the bottom wall surface of the bearing cavity **51** under the guidance of an inner wall surface of the bearing cavity **51** and the influence of gravity, and the converged droplets reduce the friction and support between the bottom wall surface of the bearing cavity **51** and the appliances borne, so that the appliances borne may displace and shake, thus further affecting the taking and placement of the appliances. Therefore, the first anti-slip portion **53** protrudes from the bottom wall surface of the bearing cavity **51** towards the cavity opening of the bearing cavity **51**, and a protruding height of the first anti-slip portion **53** is smaller than a setting depth of the bearing cavity **51**, so that the friction of the bottom wall surface of the bearing cavity **51** and the support for the appliances borne by the bearing cavity are further increased by the first anti-slip portion **53**, thus ensuring the stable storage and stable taking of the appliances, and further improving the working stability of the tray **50** and the bathtub **100**. Specifically, the first anti-slip portion **53** may be made of rubber, PVC (polyvinyl chloride), silica gel, or the like, which will not be specifically limited in the present application. In order to further increase the friction of the first anti-slip portion **53** to the appliances placed in the bearing cavity **51**, a concave-convex pattern, an anti-slip paint, an anti-slip sticker, and the like may also be arranged on a surface of one side of the first anti-slip portion **53** away from the bottom wall surface of the bearing cavity **51**, which will not be specifically limited in the present application.

[0061] As a feasible embodiment, a second anti-slip portion **13** is convexly provided on a bottom wall surface of the shower cavity **11**.

[0062] It can be understood that, during the working of the bathtub **100**, the shower cavity **11** is used for bearing the water and the body of the user taking the tub bath, and when the user takes the tub bath, the body of the user is affected by the buoyancy of the water, and a gravity part of the

body is shared by the water, so that an inner wall surface of the shower cavity **11** provides less support and friction to the body, and the user has the risk of slipping or falling during the tub bath. The second anti-slip portion **13** protrudes from the bottom wall surface of the shower cavity **11**, which further increases the friction of the bottom wall surface of the shower cavity **11**, so that the slipping of the user that may occur during the tub bath is avoided. When the user takes the tub bath with a sitting posture, the second anti-slip portion is helpful for the user to adjust the sitting posture to make the user more stable and comfortable during the tub bath; and when the user is lying in the bathtub **100**, the second anti-slip portion plays a role of pillow to provide good support for the neck and/or head of the user, so that the user can be more relaxed and maintain a comfortable posture while keeping a stable position of the head. Further, in order to increase the surface friction of the second anti-slip portion **13**, a concave-convex pattern, an anti-slip paint, an anti-slip sticker, or the like may be arranged on a surface of one side of the second anti-slip portion **13** away from the bottom wall surface of the shower cavity **11**, which will not be specifically limited in the present application. Therefore, the friction of the inner wall surface of the shower cavity **11** is increased by the second anti-slip portion **13**, thus improving the use comfort and working stability of the bathtub **100**.

[0063] As a feasible embodiment, a supporting groove **37** is concavely provided towards the shower cavity **11** in a periphery of one side of the face plate **30** away from the charging groove **31**, the supporting groove **37** and the tray **50** are oppositely arranged on two sides of the charging groove **31**, and an inner wall surface of the supporting groove **37** is arranged in a smooth transition.

[0064] It can be understood that the supporting groove **37** concavely provided towards the shower cavity **11** in the periphery of the face plate **30** has a bottom wall surface in the same recessed direction, and the bottom wall surface extends towards the shower cavity **11** from the periphery of one side of the face plate **30** away from the charging groove **31**, so that at least a part of the bottom wall surface is perpendicular to the face plate **30**. At this time, the supporting groove **37** is used for clamping and fixing a shower head (not shown in the drawings) that may be used in the tub bath. Specifically, the supporting groove is used for clamping a cylindrical part with an arc surface on one side of the shower head away from a water outlet. Therefore, there is no need to additionally arrange a shower fixture and other parts to fix and clamp the shower head, thus further optimizing a space utilization rate and a structural simplification degree of the bathtub **100**.

[0065] It can be understood that the supporting groove **37** and the tray **50** are oppositely arranged on two sides of the charging groove **31**, so that the user does not need to move a long distance or spend more energy while switching between actions of taking the appliances borne in the tray **50** and taking the shower head, so that the use flexibility and comfort of the bathtub **100** are further improved while avoiding the possibility that the shower head interferes with the parts borne in the tray **50**.

[0066] As a feasible embodiment, a hanging hole **39** is further formed in the face plate **30**, the hanging hole **39** and the charging groove **31** are oppositely arranged on two sides of the bathtub body **10**, and the hanging hole **39** penetrates through the face plate **30**.

[0067] It can be understood that the hanging hole **39** is used for facilitating the storage of the bathtub **100** after the bathtub **100** is used. Specifically, a hook or a buckle may be arranged in a place where the bathtub **100** needs to be stored, so that the bathtub may be stored by inserting or buckling the hook or the buckle with the hooking hole **39** after the bathtub **100** is used, thus further improving the use flexibility and convenience of the bathtub **100**.

[0068] It should be noted that the tray **50** and the supporting groove **37** are oppositely arranged on two sides of the charging groove **31**, and in order to avoid the possible influence on the tray **50** or the supporting groove **37** during the storage of the bathtub **100** after use, the hanging hole **39** and the charging groove **31** are oppositely arranged on two sides of the bathtub body **10**, so that the hook or the buckle penetrating through the hooking hole **39** is away from the tray **50** and the supporting groove **37** when the hanging hole **39** and the hook or the buckle are used to store the

bathtub **100**, and there is no possibility of damaging a structure of the tray **50** or the supporting groove **37** during storage, thus further improving the working stability of the bathtub **100**.

[0069] As a feasible embodiment, the bathtub body **10** comprises a bottom plate **15**, an end plate **16**, and an annular bathtub wall **17** connected between the bottom plate **15** and the end plate **16**, the face plate **30** is bent and connected with one side of the end plate **16** away from the annular bathtub wall **17**, and the annular bathtub wall **17** has a storage state in which the bottom plate **15** at least partially extends into the end plate **16** by folding, and an expansion state in which the bottom plate **15**, the end plate **16** and the annular bathtub wall **17** are enclosed to form the shower cavity **11**.

[0070] It can be understood that the bathtub body **10** composed of three parts realizes a folding function of the bathtub body **10** through the annular bathtub wall **17** connected between the bottom plate **15** and the end plate **16**. Specifically, the annular bathtub wall **17** is an elastic member, which may be formed by injection molding of thermoplastic elastomers such as thermoplastic polyurethane, thermoplastic elastic acrylate, thermoplastic elastic styrene copolymer, thermoplastic elastic polyolefin or thermoplastic elastic styrene-butadiene rubber, which will not be specifically limited in the present application. During the working of the bathtub **100**, the annular bathtub wall **17** may be indirectly affected by applying pressures to the bottom plate **15** and the end plate **16** on two sides of the annular bathtub wall **17** to be deformed. After the annular bathtub wall **17** is deformed, the bottom plate **15** sinks towards one side where the shower cavity **11** is located for a certain distance, so that an overall height of the bathtub **100** is reduced, an occupied space is reduced, and the storage is convenient. Specifically, the above deformation process takes a form of folding or unfolding according to applying directions of the pressures, so that the bathtub body **10** forms a folded state in which the occupied space is small when the bathtub is stored or an unfolded state in which the shower cavity **11** has a large volume when the bathtub is used. Therefore, the space utilization rate and use flexibility of the bathtub **100** are further improved.

[0071] Optionally, in some embodiments, as shown in FIG. **5**, a middle portion of the annular bathtub wall **17** protrudes towards one side where the shower cavity is located, the protruding middle portion of the annular bathtub wall **17** is curved, and such design plays a guiding role in a folding process of the bathtub **100**, so that the annular bathtub wall **17** may smoothly follow a bending direction of the middle portion during folding, thus being convenient for the folding process of the bathtub **100**.

[0072] As a feasible embodiment, the bathtub **100** further comprises a supporting assembly **70**, the supporting assembly **70** comprises a plurality of supporting rods **71**, and the supporting rods **71** are hinged with the end plate **16**, so as to be at least partially exposed from one side of the bottom plate **15** away from the annular bathtub wall **17** in the expansion state.

[0073] It can be understood that, during the working of the bathtub **100**, the shower cavity **11** has a large weight after bearing the water, and there is the unstable possibility only by relying on the support of the bathtub body **10**, so that the movement or shaking of the user during the tub bath drives the bathtub body **10** to move or shake together. The supporting assembly **70** is arranged and the plurality of supporting rods **71** are respectively connected with the end plate **16**, so that a pressure that may be generated during the working of the bathtub **100** is evenly shared by the end plate **16** through the plurality of supporting rods **71**, thus further improving the working stability of the bathtub body **10** and the bathtub **100**.

[0074] It should be noted that the plurality of supporting rods **71** are hinged with the end plate **16**. Therefore, when the bathtub **100** is in the storage state, each supporting rod **71** may be folded and stored on a side edge of the end plate **16** by rotating at a corresponding hinge point, or when the bathtub **100** is in the expansion state, each supporting rod is hinged and rotated to expose a part from one side of the bottom plate **15** away from the annular bathtub wall **17**, so that one exposed end of each supporting rod **71** will abut against the ground in advance of the bottom plate **15**, thus supporting the whole bathtub body **10** and further improving the use flexibility of the bathtub **100**.

[0075] The foregoing descriptions are merely preferred embodiments of the present invention, but

are not intended to limit the patent scope of the present invention. All equivalent structure transformations made using the specification of the present invention and the accompanying drawings, or being used directly or indirectly in other related technical fields, are similarly included in the protection scope of the present invention.

Claims

1. A bathtub (**100**), wherein the bathtub (**100**) comprises: a bathtub body (**10**), wherein a shower cavity (**11**) is arranged inside the bathtub body (**10**); a face plate (**30**), wherein the face plate (**30**) surrounds a cavity opening of the shower cavity (**11**) and is bent and connected with the bathtub body (**10**), and a charging groove (**31**) is concavely provided towards an extending direction away from the cavity opening in the face plate (**30**); a tray (**50**), wherein the tray (**50**) is arranged on one side of the charging groove (**31**) and fixedly connected to the face plate (**30**), and a bearing cavity (**51**) is formed in the tray (**50**); and a charging assembly, wherein the charging assembly is arranged in the charging groove (**31**) and detachably connected with the face plate (**30**), and the charging assembly is at least partially exposed from a groove opening of the charging groove (**31**).
2. The bathtub (**100**) according to claim 1, wherein the charging assembly comprises: a power supply device, wherein the power supply device is arranged in the charging groove (**31**); and a charging cable, wherein one end of the charging cable is fixedly connected to the power supply device, and the other end of the charging cable telescopically moves in and out of the charging groove (**31**), so that a part of the charging cable is exposed from the groove opening of the charging groove (**31**).
3. The bathtub (**100**) according to claim 2, wherein the face plate (**30**) is further provided with a mounting plate (**33**), a charging hole (**34**) is formed in the mounting plate (**33**), the mounting plate (**33**) at least partially covers the groove opening of the charging groove (**31**), the charging hole (**34**) is communicated with the charging groove (**31**), and one end of the charging cable away from the power supply device telescopically moves in and out of the charging hole (**34**) to enable the charging cable to be partially exposed from the groove opening of the charging groove (**31**).
4. The bathtub (**100**) according to claim 3, wherein a clamping groove (**35**) is further formed in the mounting plate (**33**), the charging assembly further comprises a display screen, the display screen is clamped with the clamping groove (**35**) and electrically connected with the power supply device, and at least a part of a wall surface of the display screen is exposed from a groove opening of the clamping groove (**35**).
5. The bathtub (**100**) according to claim 1, wherein a first anti-slip portion (**53**) is convexly provided on a bottom wall surface of the bearing cavity (**51**).
6. The bathtub (**100**) according to claim 1, wherein a second anti-slip portion (**13**) is convexly provided on a bottom wall surface of the shower cavity (**11**).
7. The bathtub (**100**) according to claim 1, wherein a supporting groove (**37**) is concavely provided towards the shower cavity (**11**) in a periphery of one side of the face plate (**30**) away from the charging groove (**31**), the supporting groove (**37**) and the tray (**50**) are oppositely arranged on two sides of the charging groove (**31**), and an inner wall surface of the supporting groove (**37**) is arranged in a smooth transition.
8. The bathtub (**100**) according to claim 1, wherein a hanging hole (**39**) is further formed in the face plate (**30**), the hanging hole (**39**) and the charging groove (**31**) are oppositely arranged on two sides of the bathtub body (**10**), and the hanging hole (**39**) penetrates through the face plate (**30**).
9. The bathtub (**100**) according to claim 1, wherein the bathtub body (**10**) comprises a bottom plate (**15**), an end plate (**16**), and an annular bathtub wall (**17**) connected between the bottom plate (**15**) and the end plate (**16**), the face plate (**30**) is bent and connected with one side of the end plate (**16**) away from the annular bathtub wall (**17**), and the annular bathtub wall (**17**) has a storage state in which the bottom plate (**15**) at least partially extends into the end plate (**16**) by folding, and an

expansion state in which the bottom plate (**15**), the end plate (**16**) and the annular bathtub wall (**17**) are enclosed to form the shower cavity (**11**).

10. The bathtub (**100**) according to claim 9, wherein the bathtub (**100**) further comprises a supporting assembly (**70**), the supporting assembly (**70**) comprises a plurality of supporting rods (**71**), and the supporting rods (**71**) are hinged with the end plate (**16**), so as to be at least partially exposed from one side of the bottom plate (**15**) away from the annular bathtub wall (**17**) in the expansion state.