US 20230180913A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0180913 A1**

Lee (43) **Pub. Date: Jun. 15, 2023**

(54) **CONTAINER HOUSING FOR MIST SPRAYER**

(71) Applicant: **Dongho Indus Co, Ltd.**, Gyeonggido (KR)

(72) Inventor: **Yoo Sang Lee**, Gyeonggido (KR)

(21) Appl. No.: **18/056,613**

(22) Filed: **Nov. 17, 2022**

(30) **Foreign Application Priority Data**

Dec. 10, 2021 (KR) 10-2021-0176212

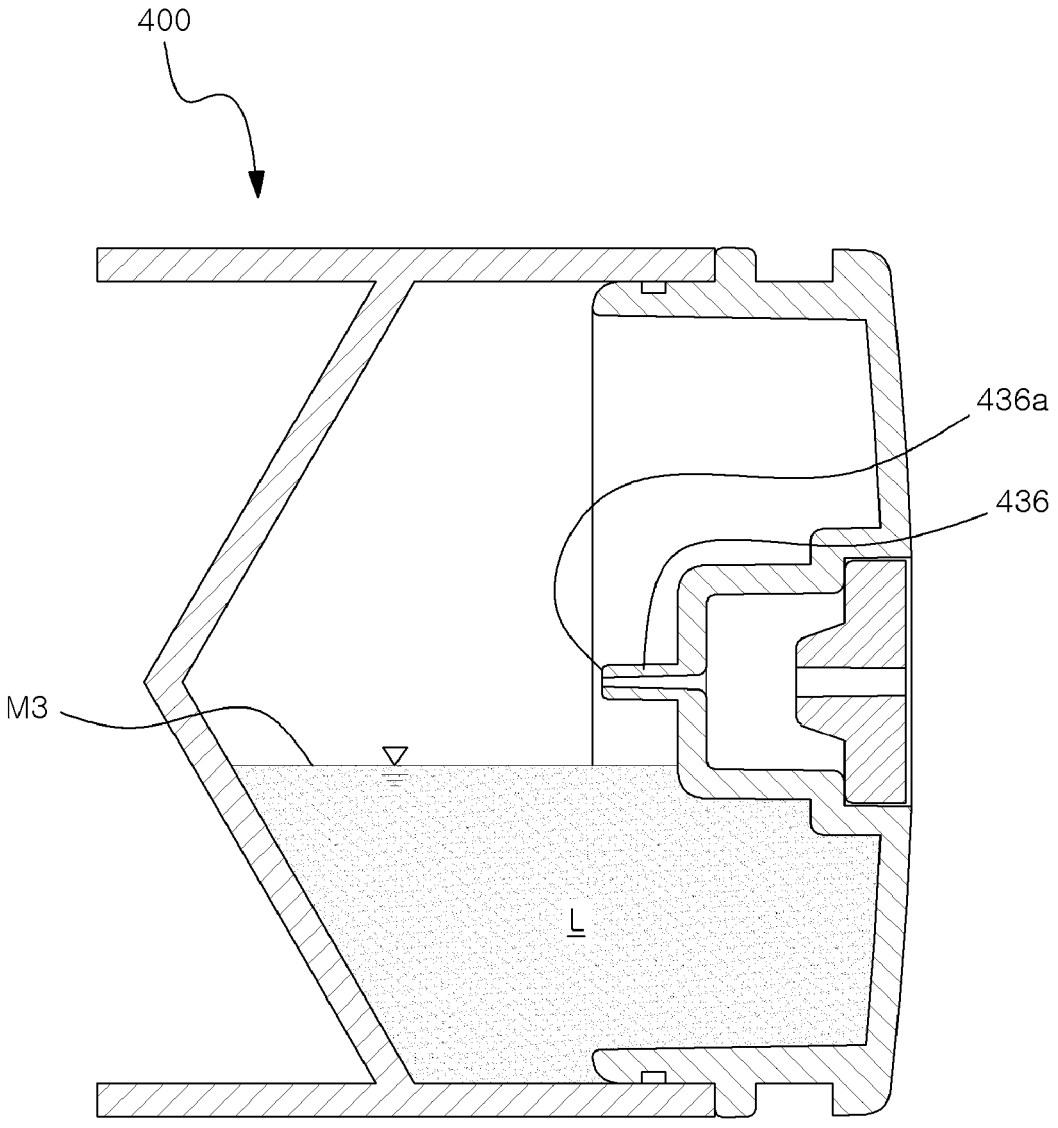
Publication Classification

(51) **Int. Cl.**
A45D 34/00 (2006.01)

(52) **U.S. Cl.**
CPC ***A45D 34/00*** (2013.01); *A45D 2200/057* (2013.01)

(57) **ABSTRACT**

Proposed is a container housing for a mist sprayer, the container housing comprising a storage tank for storing cosmetic liquid, a sealing lid for covering the open upper end of the storage tank, wherein the sealing lid comprises a cap receiving part formed by depression from the surface of a cover plate, a leak storage space part formed by being depressed into a narrower inner diameter with a step as a boundary with the cap receiving part, and a microtube formed to protrude toward the depressed surface of the storage tank by being depressed from the bottom surface of the leakage storage space, and the container housing further comprising a sealing cap inserted into the cap receiving part, the sealing cap having a fine vent pipe communicating between the outside of the cover plate and the leakage storage space part.



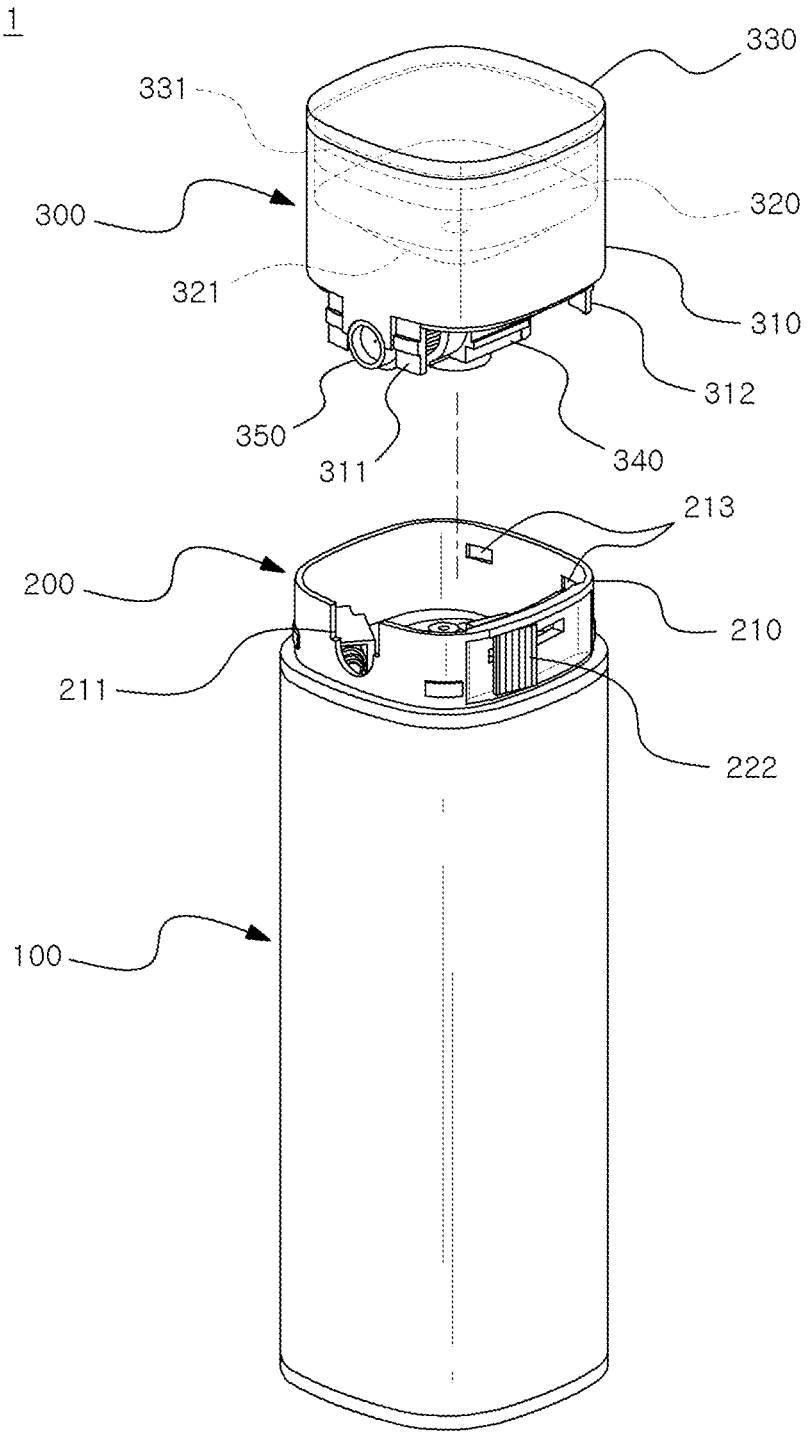


FIG. 1
(Prior Art)

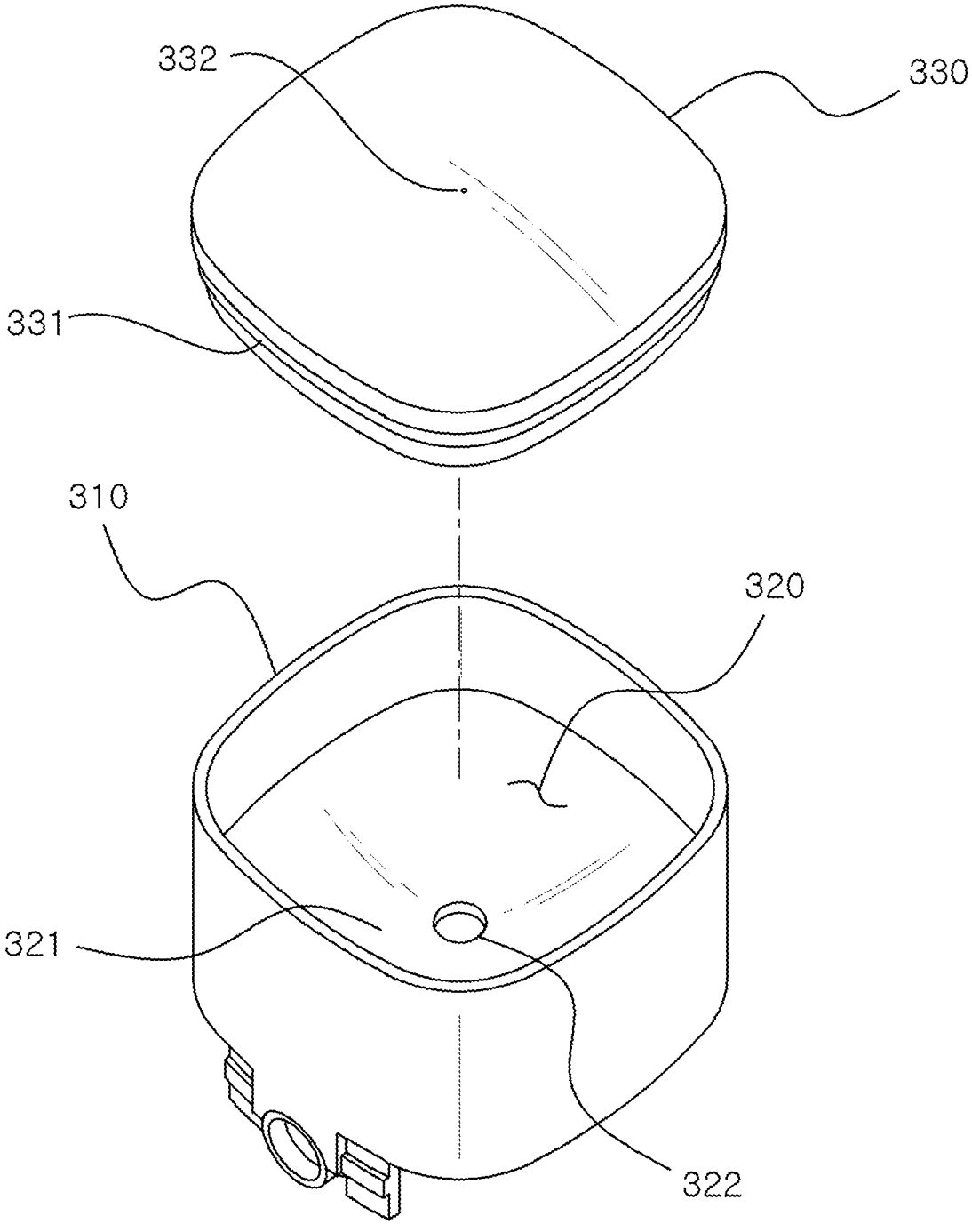


FIG. 2
(Prior Art)

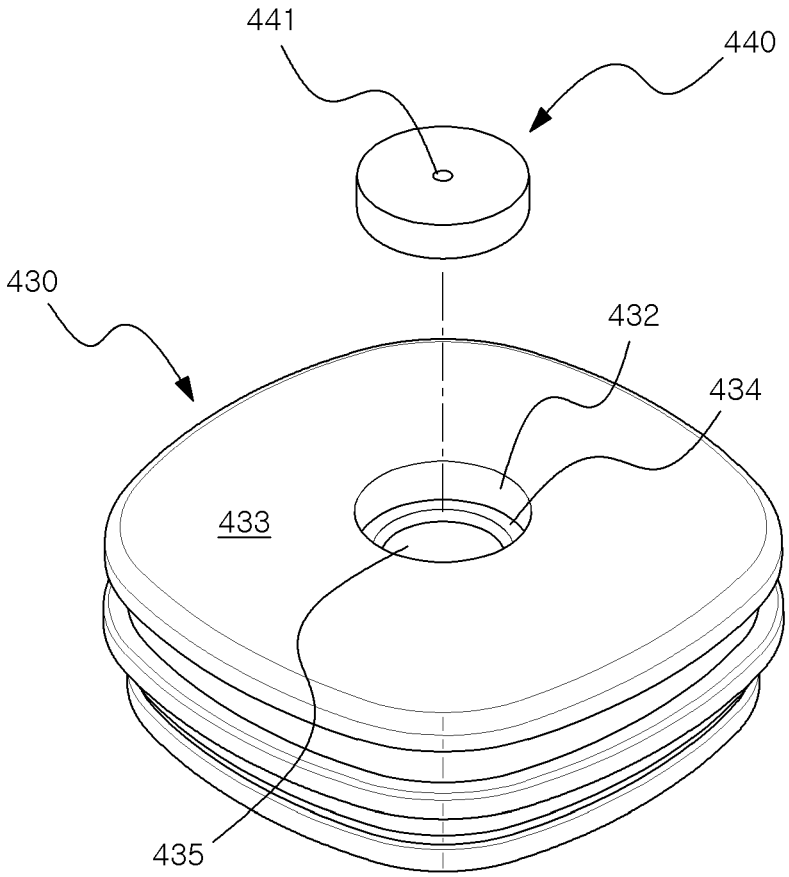


FIG. 3

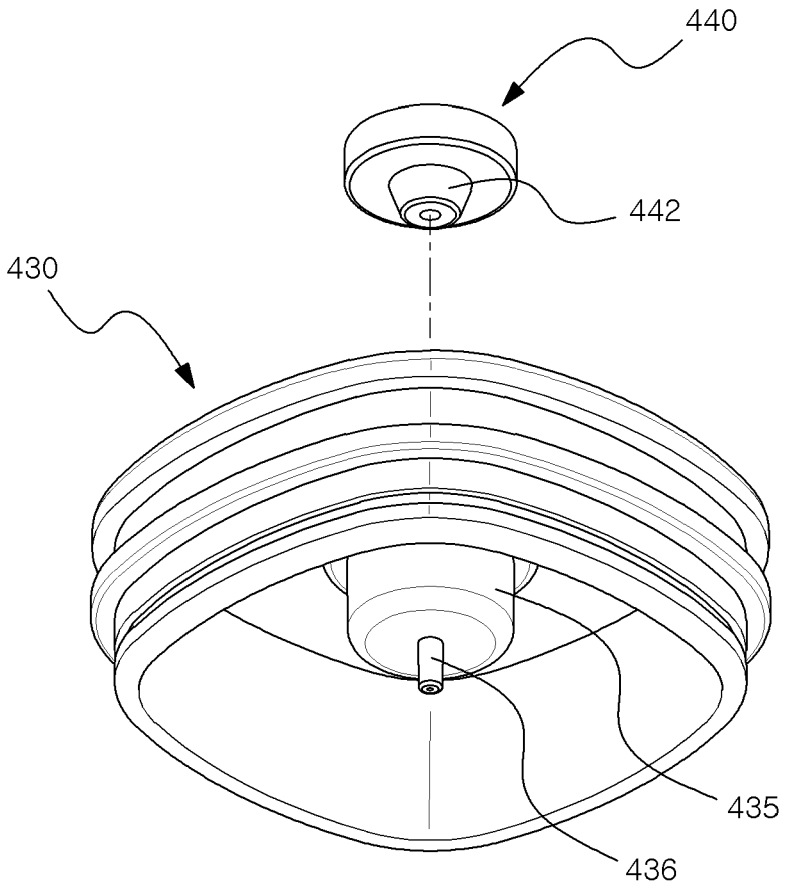


FIG. 4

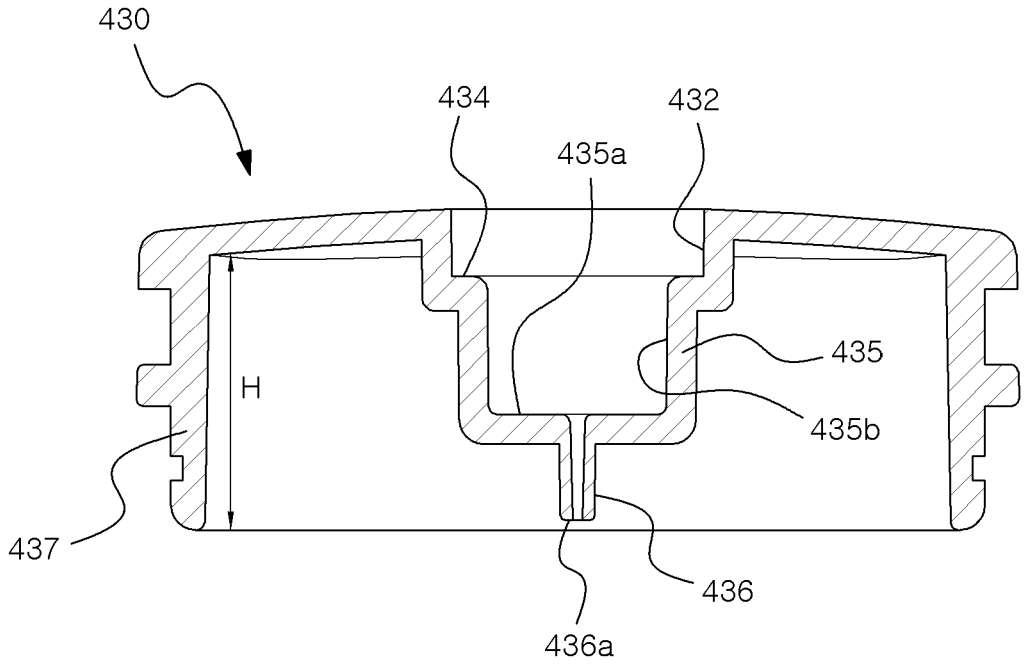


FIG. 5

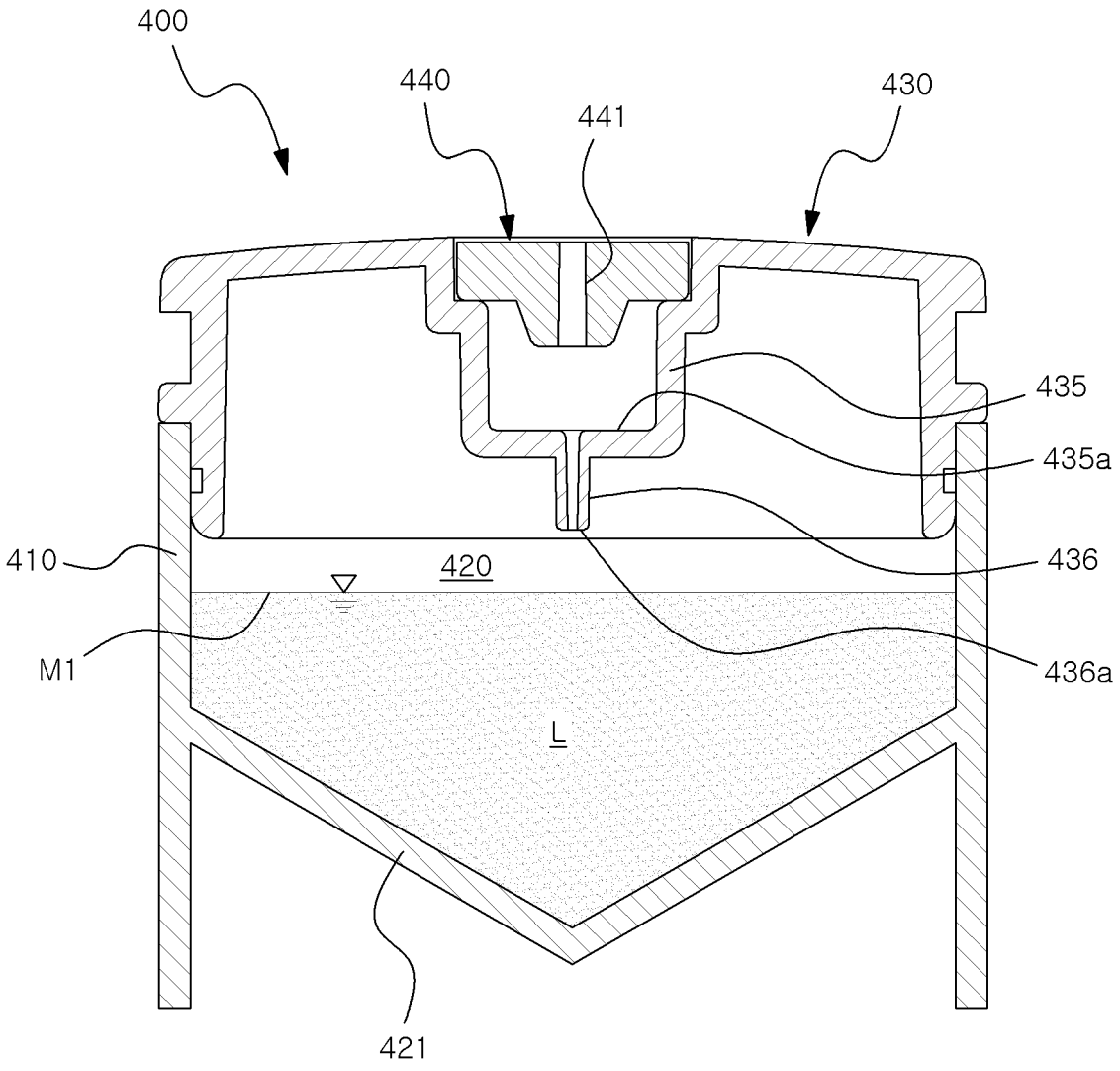


FIG. 6

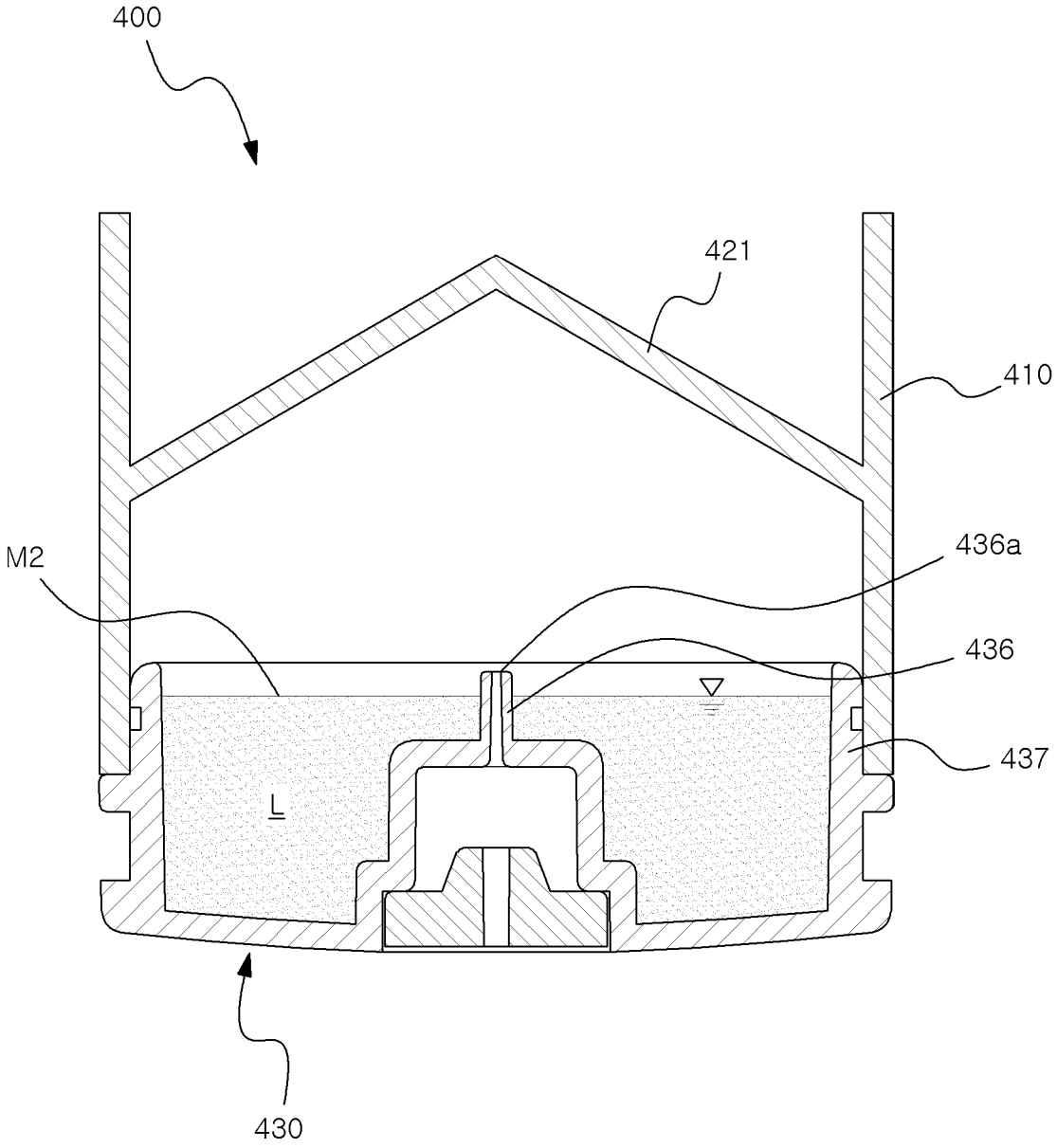


FIG. 7

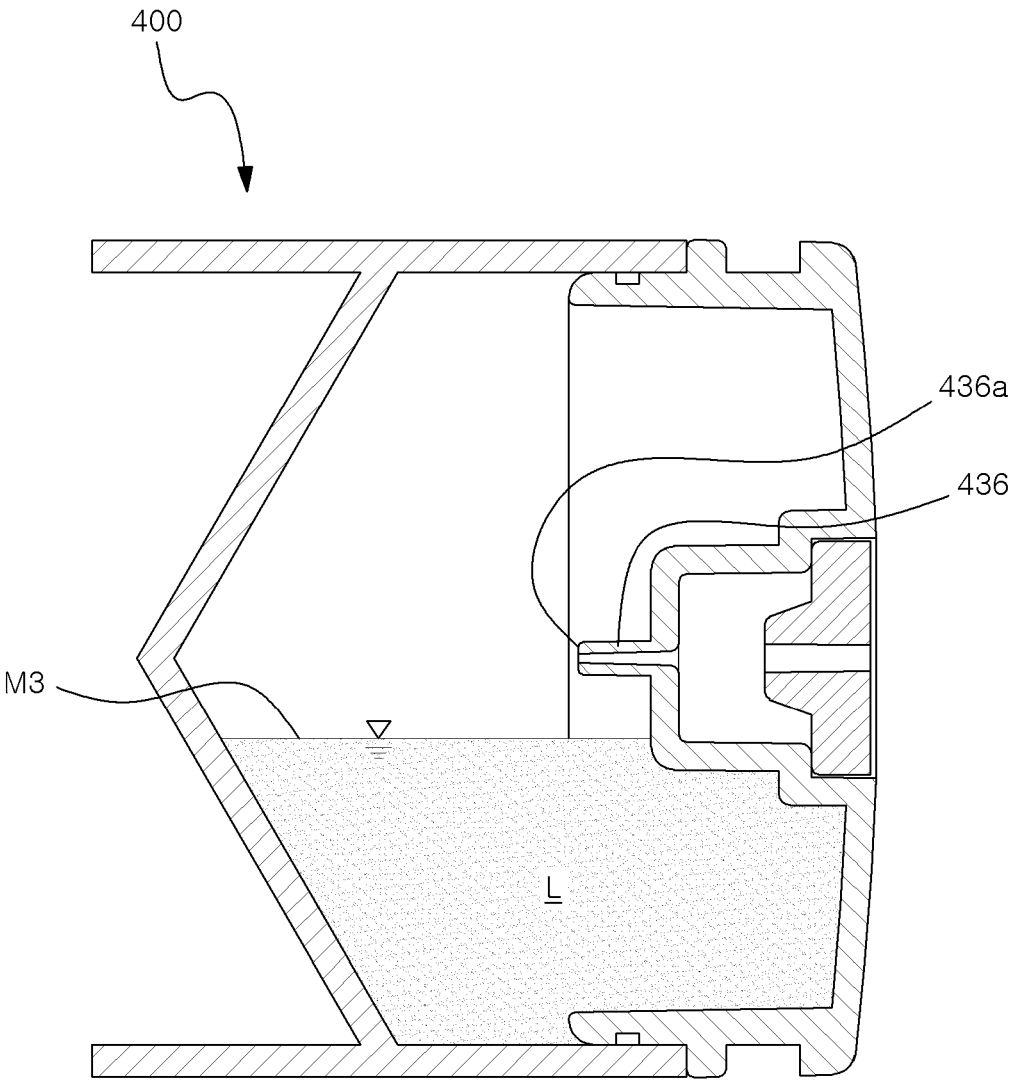


FIG. 8

CONTAINER HOUSING FOR MIST SPRAYER

CROSS REFERENCE TO RELATED APPLICATION

[0001] The present application claims priority to Korean Patent Application No. 10-2021-0176212, filed Dec. 10, 2021, the entire contents of which is incorporated herein for all purposes by this reference.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention relates to a mist sprayer, which sprays cosmetics in the form of a spray and, more particularly, to a container housing of the mist sprayer with an improved structure to prevent the outflow of stored cosmetics.

Description of the Related Art

[0003] Conventional mist sprayers have been introduced in Korean Patent Publication No. 10-2018-0051873, Korean Patent Publication No. 10-2018-0097067, Korean Patent Registration No. 10-2152955 and etc. and are gradually widely used due to their advantage of being able to be used without a problem of nozzle clogging even when spraying a cosmetic fluid having a high viscosity.

[0004] However, depending on the type of cosmetic solution, the nozzle may still be blocked by the cosmetic solution solidified by the suspended particles contained in the aqueous solution. As, in this case, the mist sprayer cannot be used as a whole and had to be disposed of according to the above-described conventional technologies, a solution to this problem was required.

[0005] In order to solve such a conventional problem, the applicant proposed a mist sprayer **1** as shown in FIG. **1**. It has an improved structure that allows a nozzle **350** to be installed in a container housing **300** detachably coupled to a main body housing **100**. In the event of a failure in which the nozzle **350** is blocked, the container housing **300** may be replaced with a new one like consumables to be mounted on the main body housing **100**. Therefore, it is possible to solve the problem of disposing of the entire mist sprayer **1**.

[0006] With this improvement, as shown in FIGS. **1** and **2**, a vent hole **332** is formed in a sealing lid **330** to help the cosmetic liquid stored in a storage tank **320** to flow smoothly into a cosmetic liquid outflow pipe **322**.

[0007] However, since the mist sprayer **1** is frequently carried by the user in a bag or the like, it may be possible to respond to some extent by setting the size of the vent hole **332** slightly smaller in consideration of cases where it is stored sideways or upside down.

[0008] However, in the case of an external impact, the outflow occurred through the vent hole **332**, so a corresponding improvement was required.

SUMMARY OF THE INVENTION

[0009] Accordingly, the present disclosure has been made keeping in mind the above problems occurring in the related art, and the objective of the present disclosure is to provide an improved container housing for a mist sprayer to prevent the cosmetic liquid stored in the storage tank from leaking through the vent hole.

[0010] In order to achieve the above objective, the present disclosure provides a container housing for a mist sprayer, the container housing comprising a storage tank formed in an inner space of a container wall to store cosmetic liquid, a cosmetic liquid outlet formed in the center of a depressed surface that forms a bottom of the storage tank, a sealing lid coupled to an upper end of the container wall to cover the open upper end of the storage tank so as to be opened and closed, wherein the sealing lid comprises a cap receiving part formed by depression from the surface of a cover plate, a leak storage space part formed by being depressed into a narrower inner diameter with a step as a boundary with the cap receiving part, and a microtube formed to protrude toward the depressed surface of the storage tank by being depressed from the bottom surface of the leakage storage space, the container housing further comprising a sealing cap inserted into the cap receiving part and tightly coupled therein, the sealing cap having a fine vent pipe communicating between the outside of the cover plate and the leakage storage space part.

[0011] According to an aspect of the present disclosure, a protruding end of the microtube is located higher than the level of the cosmetic liquid of a standard capacity of the storage tank whether the container housing is in an upright state or in an inverted state, and the microtube is always located higher than the level of the cosmetic liquid of the standard capacity until the container housing in the upright state is tilted to a horizontal lying state.

[0012] According to an aspect of the present disclosure, the sealing lid has a lid wall formed to a certain depth along the edge, the protruding end of the microtube is formed to extend substantially to a lower end of the lid wall, and the level of the cosmetic liquid of the standard capacity is lower than the lid wall when the container housing is in the inverted state.

[0013] According to an aspect of the present disclosure, the cosmetic liquid of the standard capacity is accommodated only in the storage tank and does not contact the lid wall when the container housing is in the upright state.

[0014] According to an aspect of the present disclosure, the sealing cap is made of silicon.

[0015] According to the container housing for a mist sprayer according to the present invention as described above, although external air may flow into the inner space of the storage tank through the fine vent pipe of the of the sealing cap, the leakage storage space part and the microtube, the cosmetic liquid stored in the storage tank can be made to be difficult to flow out through the microtube. Even if there is a cosmetic liquid that passes through the microtube, it will only smear on the bottom of the leakage storage space part so that it is very difficult to flow out through the fine vent pipe of the sealing cap. Therefore, it is possible to substantially prevent the cosmetic liquid stored in the storage tank from leaking to the outside.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] The above and other objectives, features, and other advantages of the present disclosure will be more clearly understood from the following detailed description when taken in conjunction with the accompanying drawings, in which:

[0017] FIG. **1** shows a perspective view of a container housing separated from a mist sprayer according to the prior art;

[0018] FIG. **2** shows a perspective view of the container housing of FIG. **1** in which a sealing lid is opened;

[0019] FIGS. **3** and **4** show exploded perspective views of a container housing for a mist sprayer as viewed from the top and bottom according to an embodiment of the present invention;

[0020] FIG. **5** shows a cross-sectional view of the sealing lid illustrated in FIG. **4**; and

[0021] FIGS. **6** to **8** show cross-sectional views of the container housing for a mist sprayer according to the embodiment of the present invention in an upright state, an inverted state, and a horizontal lying state, respectively when cosmetic liquid is accommodated in the container housing to its standard capacity.

DETAILED DESCRIPTION OF THE INVENTION

[0022] As shown in FIGS. **3** and **4**, a container housing **400** according to the embodiment of the present invention includes a sealing cap **430**. A cover plate **433** of the sealing lid **430** is recessed at the center of its surface to form a cap receiving part **432**. A silicone sealing cap **440** is inserted into the cap receiving part **432** and is closely coupled to each other. A fine vent pipe **441** is vertically formed in the center of the sealing cap **440**.

[0023] A leakage storage space part **435** is provided at a lower end of the cap receiving part **432** to be formed by being depressed into a narrower inner diameter with a stepped part **434** as a boundary (see FIG. **5**). A microtube **436** is further provided to be formed by being depressed from a horizontal bottom surface **435***a* of the leakage storage space part **435**.

[0024] Referring to FIG. **5**, a lid wall **437** forming the edge of the sealing lid **430** is formed to have a predetermined height up and down, that is, a predetermined depth (H) unlike the conventional technology (see **330** in FIG. **2**). A protruding end **436***a* forming the lower end of the microtube **436** is extended to approximately coincide with the lower end line of the lid wall **437**.

[0025] FIG. **6** illustrates a state in which the sealing lid **430** as described above is coupled to a storage tank **420**. The storage tank **420** in which the cosmetic liquid is accommodated is defined by a container wall **410** as an inner space thereof. A cosmetic liquid outlet (not shown in the drawing, see **322** of FIG. **2**) is formed at the center of a recessed surface **421** forming an inclined bottom of the storage tank **420**.

[0026] The sealing lid **430** is coupled to the upper end of the container wall **410** to cover the open upper end of the storage tank **420** so as to be opened and closed.

[0027] FIG. **6** shows the container housing **400** in an upright state where the cosmetic liquid L is accommodated in the storage tank **420** to its standard capacity (ex. 7 cc). The volume of the storage tank **420** is set so that the cosmetic liquid L is sufficiently contained by forming its level M**1** up to about half the height of the container wall **410**. Accordingly, the protruding end **436***a* of the microtube **436** of the sealing lid **430** is positioned higher than the level M**1** of the cosmetic liquid L, so that it does not allow the cosmetic liquid L to contact or permeate therein.

[0028] FIG. **7** shows the container housing **400** in an inverted state where the cosmetic liquid L accommodated to the standard capacity is contained only in the sealing lid **430**. That is, the water level M**2** of the cosmetic liquid L forms a lower height than the lid wall **437**. In this case, as the protruding end **436***a* of the microtube **436** is substantially on the same height line as the lid wall **437**, it is still located higher than the level M**2** of the cosmetic liquid L. Therefore, it is possible to prevent the cosmetic liquid L from easily permeating.

[0029] FIG. **8** shows the container housing **400** in a horizontal lying state. Even at this state, the protruding end **436***a* of the microtube **436** is still positioned higher than the water level M**3** of the cosmetic liquid L accommodated to the standard capacity.

[0030] According to these principles, it can be seen that the protruding end **436***a* of the microtube **436** is always located higher than the level (see M**1**, M**3**) of the cosmetic liquid L from the standing state of FIG. **6** to the horizontal lying state of FIG. **8**.

[0031] In addition, even in the inverted state of FIG. **7**, since the cosmetic liquid L does not reach the protruding end **436***a* of the microtube **436**, it can be seen that the outflow through the microtube **436** will be extremely rare.

[0032] Moreover, even if the cosmetic liquid L in the state including any of FIGS. **6** to **8** flows into the microtube **436** due to the external impact or others, it is primarily deemed to be stained on the bottom surface **435***a* of the leakage storage space part **435** connected at a right angle from the microtube **436**, so it does not immediately leak outside.

[0033] Since the cosmetic liquid L flowing out to the leakage storage space part **435** will be only a small amount and this will mainly spread along the wall, it will be very difficult for the cosmetic liquid to pass through the bottom surface **435***a* which is perpendicular to the microtubule **436**, an inner wall surface **435***b* which is perpendicular to the bottom surface **435***a* and reach the sealing cap **440** which is perpendicular to the inner wall surface **435***b*.

[0034] Finally, the cosmetic liquid L must pass through the fine vent pipe **441** located in the center of the sealing cap **440** again in order to be discharged to the outside.

[0035] Therefore, it is practically impossible for such a series of phenomena to occur in succession and the cosmetic liquid L to flow out of the container housing **400**.

[0036] A cone-shaped protruding end part (**442** in FIG. **4**) protruding from the bottom surface of the sealing cap **440** can contribute to further complicating the outflow path of the cosmetic liquid L.

[0037] Meanwhile, the container housing **400** for a mist sprayer described above is only an embodiment for helping the understanding of the present disclosure, so the scope of the present disclosure defined by the claims to be described below should not be limited by the above description.

What is claimed is:

1. A container housing for a mist sprayer, the container housing comprising a storage tank formed in an inner space of a container wall to store cosmetic liquid, a cosmetic liquid outlet formed in the center of a depressed surface that forms a bottom of the storage tank, a sealing lid coupled to an upper end of the container wall to cover the open upper end of the storage tank so as to be opened and closed,

wherein the sealing lid comprises a cap receiving part formed by depression from the surface of a cover plate, a leak storage space part formed by being depressed into a narrower inner diameter with a step as a boundary with the cap receiving part, and a microtube formed

to protrude toward the depressed surface of the storage tank by being depressed from the bottom surface of the leakage storage space,

the container housing further comprising a sealing cap inserted into the cap receiving part and tightly coupled therein, the sealing cap having a fine vent pipe communicating between the outside of the cover plate and the leakage storage space part.

2. The container housing of claim **1**, wherein, a protruding end of the microtube is located higher than the level of the cosmetic liquid of a standard capacity of the storage tank whether the container housing is in an upright state or in an inverted state, and

the microtube is always located higher than the level of the cosmetic liquid of the standard capacity until the container housing in the upright state is tilted to a horizontal lying state.

3. The container housing of claim **2**, wherein, the sealing lid has a lid wall formed to a certain depth along the edge,

the protruding end of the microtube is formed to extend substantially to a lower end of the lid wall,

the level of the cosmetic liquid of the standard capacity is lower than the lid wall when the container housing is in the inverted state.

4. The container housing of claim **3**, wherein, the cosmetic liquid of the standard capacity is accommodated only in the storage tank and does not contact the lid wall when the container housing is in the upright state.

5. The container housing of claim **1**, wherein, the sealing cap is made of silicon.

* * * * *