

DESCRIPTION

TITLE OF THE INVENTION:

CONTAINER FOR COATING TOOL

TECHNICAL FIELD

[0001] The container for coating tool present invention relates to a container for coating tool in which a medicinal liquid or the like can be stored and which can directly apply the medicinal liquid or the like stored therein to an affected part or the like. In particular, the present invention relates to a container for coating tool that can be preferably used for applying a medicinal liquid such as an athlete's foot medicine to a narrow site such as between toes, for example.

BACKGROUND ART

[0002] Containers for coating a medicinal liquid or the like to a given narrow site are known (for example, see Patent Literature 1).

[0003] A conventional container for coating tool includes: a container body in which a medicinal liquid or the like is stored; an coating tool using a brush, a sponge, or the like; an inside plug which is inserted into a mouth of the container body; a nozzle body having a hollow convergent shape combined with the inside plug so as to be movable in an up-down direction relative to the inside plug; a screw-type attachment cap; and a holder integrated with the nozzle body. Here, the coating tool, the inside plug, the nozzle body, and the holder are attached to the mouth of the container body by means of the attachment cap. Further, when the nozzle body is lowered into the inside plug, an opening which is open in a side face of the inside plug is closed with a lower end portion of the nozzle body. On the other hand, when the nozzle body is raised, the opening of the inside plug becomes open. When the attachment cap is rotated in a loosening direction, the nozzle body is raised to open the opening of the inside plug, thereby allowing the medicinal liquid in the container body to flow out of the leading end of the nozzle body, to be supplied to the coating tool. On the other hand, when the attachment cap is rotated in the reverse direction, the nozzle body is lowered, to be able to close the opening of the inside plug. It should be noted that, when not used, the coating tool is covered with an over cap different from the attachment cap.

CITATION LIST

[PATENT LITERATURE]

[0004] Patent Literature 1: Japanese Laid-Open Patent Publication No. 2005-67627

SUMMARY OF THE INVENTION

PROBLEMS TO BE SOLVED BY THE INVENTION

[0005] According to such a conventional container for coating tool, the medicinal liquid from the container is supplied to the coating tool by rotating, in use, the attachment cap in the loosening direction to open the opening of the inside plug, and the supply of the medicinal liquid to the coating tool is cut off by rotating, after use, the attachment cap in the reverse direction to close the opening of the inside plug. Here, even when the opening of the inside plug is closed after use, a large amount of medicinal liquid remaining inside the nozzle body is continued to be supplied to the coating tool. Thus, there is a problem that the medicinal liquid may be wasted or leak to the outside from the gap below the over cap. In addition, there is also a problem that the coating tool is easy to bend and coat to a narrow site is difficult.

[0006] The present invention has been made in consideration of the problems in conventional containers for coating tool as described above. The present invention provides an container for coating tool which is less likely to cause waste or leak of the medicinal liquid after use compared with conventional containers for coating tool, and which allows easy cort of the medicinal liquid even to a narrow site.

SOLUTIONS TO THE PROBLEMS

[0007] The present invention comprising:
a container body in which a medicinal liquid is stored;
an inside plug which includes a nozzle cylinder and which is pressed into a mouth of the container body;
an coating tool using a sponge member in which interconnecting cells are formed, the coating tool including an coating tool part which covers the nozzle cylinder; and
a cap which is detachably mounted to the mouth, wherein
the inside plug includes an outlet hole for the medicinal liquid which is open at a leading end of the nozzle cylinder, and
the cap is configured to, when mounted to the mouth, close the outlet hole by pressing the coating tool part at a leading end face of the nozzle cylinder, and is configured to, when removed from the mouth, open the outlet hole to allow the medicinal liquid to ooze to a surface of the coating tool part.

[0008] In the present invention, the coating tool includes a flange extending toward an outer circumference direction formed at a lower end of the coating tool part, and is fixed to the inside plug via an attachment ring which confines the flange to a shoulder of the inside plug on

which the nozzle cylinder stands.

[0009] In the present invention, on an outer face of the coating tool part, either a plurality of annular projections projecting in series toward a circumference direction are provided or a plurality of grooves recessed in series in a symmetry axis direction are provided.

[0010] In the present invention, on an outer face of the nozzle cylinder, one or more ribs projecting in series toward a circumference direction for engaging the coating tool part are provided.

In the present invention, inside the cap, a protection skirt which houses the coating tool part is provided so as to hang.

ADVANTAGEOUS EFFECTS OF THE INVENTION

[0011] According to the present invention, the inside plug pressed into the mouth of the container body includes a nozzle cylinder, and at the leading end of the nozzle cylinder, an outlet hole for the medicinal liquid is open. Therefore, the medicinal liquid in the container body flows out through the outlet hole to ooze to a surface of the coating tool part covering the nozzle cylinder. Accordingly, the medicinal liquid can be applied to a given site via the coating tool part. The coating tool using a sponge member includes a coating tool part having a cylindrical shape whose inner diameter has a size that matches and is substantially the same as the outer diameter of the nozzle cylinder. The coating tool can cover the entire length of the nozzle cylinder with the upper end of the coating tool part closed. Thus, by the nozzle cylinder reaching a leading end portion of the coating tool part, the coating tool part does not bend unexpectedly, and thus, the medicinal liquid can be easily applied even to a narrow site. However, it is preferable that the entire thickness of the coating tool including the coating tool part is substantially uniform.

[0012] When the cap is mounted to the mouth, the inner face of the top portion of the cap approaches the leading end face of the nozzle cylinder to press and compress the coating tool part at the leading end face of the nozzle cylinder, thereby closing the outlet hole. Therefore, there is no risk of the medicinal liquid in the container and the medicinal liquid in the nozzle cylinder flowing out through the outlet hole to be wasted after use. Since the coating tool using the sponge member has elasticity, if the cap is removed and the pressing force is released, the coating tool soon returns to its original shape.

[0013] The coating tool can be integrally fixed to the inside plug by confining the flange extending toward the outer circumference direction at the lower end of the coating tool part, to the upper face of the shoulder of the inside plug via the attachment ring. Thus, the coating tool does not unexpectedly come off the nozzle cylinder of the inside plug.

[0014] The coating tool part of the coating tool can have an increased outer surface area, by providing, on the outer face of the coating tool part, a plurality of annular projections projecting in series toward the circumference direction, or a plurality of grooves recessed in series in the symmetry axis direction. Accordingly, operation of applying the medicinal liquid can be still easier. Further, if one or more ribs projecting in series toward the circumference direction for engaging the coating tool are provided on the outer face of the nozzle cylinder, an effect of preventing the coating tool from slipping off can be improved.

[0015] The protection skirt provided so as to hang in the cap houses substantially the entirety of the coating tool part on the nozzle cylinder, thereby preventing quick evaporation, solidification, or the like of the medicinal liquid oozing to the surface of the coating tool part. Therefore, the surface of the coating tool part can be maintained in a wet state with the medicinal liquid for a long time period. However, the inner diameter of the protection skirt is set to be slightly larger than the outer diameter of the coating tool part such that the coating tool part can be housed in the skirt with a slight gap therebetween.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] [FIG. 1] FIG. 1 is an exploded perspective view showing parts of the entirety of an container for coating tool according to the present embodiment.

[FIG. 2] FIG. 2 is an assembly longitudinal sectional view showing the overall structure of the container for coating tool according to the present embodiment.

[FIG. 3] FIG. 3 is an enlarged assembly longitudinal sectional view showing main parts of the assembly longitudinal sectional view shown in FIG. 2.

[FIG. 4] FIG. 4 is an enlarged assembly front view showing main parts of the container for coating tool without a cap.

[FIG. 5] FIG. 5(A) is an enlarged exploded perspective view showing main parts of a container for coating tool according to modification 1. FIG. 5(B) is an enlarged assembly longitudinal sectional view showing the structure of main parts of the container for coating tool according to modification 1.

[FIG. 6] FIG. 6(A) is an enlarged exploded perspective view showing main parts of a container for coating tool according to modification 2. FIG. 6(B) is an enlarged assembly longitudinal sectional view showing the structure of main parts of the container for coating tool according to modification 2.

[FIG. 7] FIG. 7(A) is an enlarged exploded perspective view showing main parts of a container for coating tool according to modification 3. FIG. 7(B) is an enlarged assembly longitudinal sectional view showing the structure of main parts of the container for coating tool

according to modification 3.

[FIG. 8] Each of FIGS. 8(A), 8(B), and 8(C) is an enlarged assembly longitudinal sectional view showing the structure of a top portion of a container for coating tool according to modification 4.

DESCRIPTION OF EMBODIMENTS

[0017] Hereinafter, an embodiment of the present invention will be described with reference to the drawings.

<Embodiment 1>

[0018] As shown in FIG. 1 and FIG. 2, the container for coating tool includes a container body 10 in which a medicinal liquid is stored, an inside plug 20, a coating tool 30, an attachment ring 40, and a cap 50.

[0019] The container body 10 is a plastic container obtained by integrally molding a barrel 11 and a mouth 12 facing upward. On the outer periphery of the mouth 12, a male screw 13 for the cap 50 is formed.

[0020] As shown in FIG. 1 and FIG. 3, the inside plug 20 is a plastic component obtained by integrally molding a skirt part 21, a flange 22 extending toward the outer circumference direction, a shoulder 23, and a nozzle cylinder 24, and has a hollow body structure in an axial symmetry as a whole.

[0021] The skirt part 21 is configured to be pressed into the mouth 12 of the container body 10. The outer diameter of the skirt part 21 has a size matches and is substantially the same as the inner diameter of the mouth 12. A lower portion of the outer periphery of the skirt part 21 has a gradually-reduced diameter in a downward direction. The outer diameter of the flange 22 is the same as the outer diameter of the upper end edge of the mouth 12. The shoulder 23 serves as a step-like connection part which connects the flange 22 having a large diameter and the nozzle cylinder 24 having a small diameter together. On the upper face of the shoulder 23, an engagement rib 23a for engaging the coating tool 30 is formed. On the periphery of the shoulder 23, an annular engagement part 23b for the attachment ring 40 is formed.

[0022] The nozzle cylinder 24 is provided so as to stand on the shoulder 23, and extends in an elongated manner in the symmetry axis direction of the inside plug 20. In a leading end face, which is flat, of the nozzle cylinder 24, an outlet hole 24a for the medicinal liquid is open, and a lower portion of the outlet hole 24a is open in a tapered shape.

[0023] The coating tool 30 is a sponge member which contains interconnecting cells and which is obtained by integrally molding a flange 32 extending toward the outer circumference

direction to the lower end of a coating tool part 31 having a cylindrical shape. The length of the coating tool part 31 has a size that matches and is substantially the same as the length of the nozzle cylinder 24, and the inner diameter of the coating tool part 31 has a size that matches and is substantially the same as the outer diameter of the nozzle cylinder 24. The outer diameter of the flange 32 is the same as the outer diameter of the shoulder 23. Further, the leading end of the coating tool part 31 is closed by a flat face, and the peripheral edge portion of the flat face is rounded. Thus, the coating tool 30 is combined with the inside plug 20 without any gap therebetween, by covering the entire length of the nozzle cylinder 24.

[0024] The attachment ring 40 is a plastic component obtained by integrally molding a confining part 42 having a ring shape facing obliquely upward, to an upper portion of a body part 41 which can house the shoulder 23 of the inside plug 20. It should be noted that the coating tool part 31 of the coating tool 30 can be inserted through the confining part 42. On the inner periphery of the body part 41, an engagement part 41a having an annular shape which engages the engagement part 23b on the inside plug 20 side is formed. At the leading end of the confining part 42, a press rib 42a facing downward which corresponds to the engagement rib 23a on the inside plug 20 side is formed. Therefore, by inserting the nozzle cylinder 24 of the inside plug 20 covered with the coating tool 30, through the confining part 42 from therebelow, and by causing the engagement parts 41a and 23b to be engaged with each other, thereby integrally connecting the coating tool 30 and the inside plug 20 together, the attachment ring 40 can confine the flange 32 on the shoulder 23 between the engagement rib 23a and the press rib 42a via the confining part 42, thereby integrally fixing the coating tool 30 to the inside plug 20.

[0025] The cap 50 is a plastic component whose top portion is formed in a dome shape, and whose outer periphery lower portion is provided with roulette 51 for slip prevention, and whose inner periphery lower portion is provided with a female screw 52. The female screw 52 fits the male screw 13 on the container body 10 side. Thus, the cap 50 is a screw-type cap that is attachable and detachable relative to the mouth 12 of the container body 10, via the female screw 52 and the male screw 13.

[0026] On the inner face of the top portion of the cap 50, a seal ring 53 projecting in a ring shape is formed. The seal ring 53 faces the leading end face of the nozzle cylinder 24 of the inside plug 20, via the coating tool part 31 of the coating tool 30. Therefore, when the cap 50 is mounted to the mouth 12 of a container 10, the seal ring 53 presses and compresses the coating tool part 31 around the outlet hole 24a in the leading end face of the nozzle cylinder 24 into a ring shape, thereby being able to close the outlet hole 24a.

[0027] Inside the cap 50, a protection skirt 54 and a restriction skirt 55 are coaxially provided so as to hang. The protection skirt 54 can house substantially the entire length of the

coating tool part 31 exposed above the attachment ring 40. The restriction skirt 55 having a larger diameter than that of the protection skirt 54 hangs outside the attachment ring 40, and reaches the flange 22 of the inside plug 20, thereby restricting the limit of the screwing amount of the cap 50 relative to the mouth 12. It should be noted that, in space 56 having a ring shape outside the protection skirt 54, a plurality of reinforcing plates (not shown) which connects the outer face of the protection skirt 54 to the inner face of the restriction skirt 55 may be radially arranged.

[0028] When the cap 50 is mounted to the mouth 12 with a medicinal liquid (not shown) stored in the container body 10, as shown in FIG. 3, the outlet hole 24a for the medicinal liquid at the leading end of the nozzle cylinder 24 of the inside plug 20 is closed. Thus, there is no risk of the medicinal liquid leaking outside.

[0029] As shown in FIG. 4, when the cap 50 is removed from the mouth 12, the coating tool 30 which has been pressed into a ring shape by the seal ring 53 of the cap 50 returns to its original shape due to elasticity thereof. As a result, the outlet hole 24a at the leading end of the nozzle cylinder 24 opens, and the medicinal liquid in the container body 10 flows out through the outlet hole 24a, and oozes to a surface of the coating tool part 31 of the coating tool 30 using the sponge member. Thus, by using a leading end portion of the coating tool part 31 of the coating tool 30, the medicinal liquid can be applied to a desired narrow site, and by using a peripheral side portion of the coating tool part 31, the medicinal liquid can be applied to a desired wide site. When assuming that an athlete's foot medicine is to be applied between toes, the length and the outer diameter of the coating tool part 31 projecting above the attachment ring 40 are preferably about 15 to 20 mm and about 6 to 10 mm, respectively.

[0030] <Modification 1>

As shown in FIG. 5(A) and FIG. 5(B), in modification 1, the coating tool 30 includes only the coating tool part 31 with the flange 32 eliminated, and further, the attachment ring 40 which integrally fixes the coating tool 30 to the inside plug 20 is eliminated.

[0031] The coating tool part 31 is formed in a tapered shape facing upward as a whole, with the outer diameter thereof slightly and gradually increased in a downward direction. Further, on the outer face of the nozzle cylinder 24 of the inside plug 20, a plurality of engagement ribs 24b projecting in series toward the circumference direction for engaging the coating tool part 31 are formed.

The coating tool 30 is combined with the inside plug 20 so as to cover the nozzle cylinder 24 for the entire length thereof, and is prevented from slipping off by means of the engagement ribs 24b.

The upper face of the shoulder 23 of the inside plug 20 is formed in a flat face,

with the engagement rib 23a eliminated.

From the periphery of the shoulder 23, the engagement part 23b is eliminated. It should be noted that the number of the engagement ribs 24b of the nozzle cylinder 24 may be any number of one or more.

[0032] <Modification 2>

As shown in FIG. 6(A) and FIG. 6(B), in modification 2, on the outer face of the coating tool part 31 of the coating tool 30, a plurality of annular projections 31a projecting in series toward the circumference direction are provided.

[0033] In a container for coating tool according to modification 2, the inside plug 20 and the attachment ring 40 respectively have the same shapes as those of the inside plug 20 and the attachment ring 40 of embodiment 1 shown in FIG. 1 to FIG. 3. On the other hand, each annular projection 31a of the coating tool 30 is formed in an angled shape whose cross section is a triangle.

Above the flange 32, a reinforcing part 32a for the coating tool part 31 is formed.

The protection skirt 54 of the cap 50 is formed to have a sufficiently large diameter, so as to hang outside each annular projection 31a of the coating tool 30. It should be noted that the number of the annular projections 31a may be any number of two or more.

[0034] <Modification 3>

As shown in FIG. 7(A) and FIG. 7(B), in modification 3, on the outer face of the coating tool part 31 of the coating tool 30, a plurality of grooves 31b recessed in series in the symmetry axis direction are formed.

[0035] In an container for coating tool according to modification 3, the inside plug 20 and the attachment ring 40 respectively have the same shapes as those of the inside plug 20 and the attachment ring 40 of embodiment 1 shown in FIG. 1 to FIG. 3. On the other hand, the grooves 31b of the coating tool 30 are each formed to have a V shape in its cross section, and are arranged at an equal pitch along the entire periphery of the coating tool part 31 projecting above the attachment ring 40. It should be noted that the grooves 31b may be partially formed only on a part of the outer periphery of the coating tool part 31, instead of the entire periphery of the coating tool part 31, and preferably, arranged in axial symmetry relative to the coating tool part 31. Further, each groove 31b may have any cross section other than a V shape, but is preferably formed to have a size that allows the medicinal liquid to be held therein due to surface tension.

[0036] <Modification 4>

In a container for coating tool according to modification 4 shown in FIG. 8(A), the seal ring 53 formed on the inner face of the top portion of the cap 50 is replaced with a projection 53a which has a cylindrical or truncated cone shape and which is provided so as to

hang from the center of the inner face of the top portion.

In a container for coating tool according to modification 4 shown in FIG. 8(B), the seal ring 53 formed on the inner face of the top portion of the cap 50 is replaced with a projection 53b which has a hemispheric or circular dome shape and which is provided so as to hang from the center of the inner face of the top portion.

In a container for coating tool according to modification 4 shown in FIG. 8(C), the seal ring 53 formed on the inner face of the top portion of the cap 50 is replaced with a seal ring 53c formed on the leading end face of the nozzle cylinder 24 of the inside plug 20.

Each of the projection 53a, the projection 53b, and the seal ring 53c can, when the cap 50 is mounted to the mouth 12 of the container 10, close the outlet hole 24a at the leading end of the nozzle cylinder 24, by pressing the coating tool part 31 in a similar manner to that of the seal ring 53.

[0037] In the description above, each of the container 10, the inside plug 20, the attachment ring 40, and the cap 50 can be integrally molded, by use of a plastic material such as high density polyethylene, polypropylene, or the like. Further, the coating tool 30 is integrally formed by a sponge member having an appropriate elasticity and containing interconnecting cells, such as foamed rubber, a sinter-molded article, or the like.

[0038] It should be noted that each of the annular projections 31a shown in FIG. 6 and the grooves 31b shown in FIG. 7 may be used in the coating tool 30 shown in FIG. 5. Further, the engagement rib 24b shown in FIG. 5 may be used in the inside plug 20 shown in FIG. 1, FIG. 6, and FIG. 7. Further, as long as causing no incompatibility, embodiment 1 and modifications 1 to 4 can be implemented in any combination.

[0039] The present application claims benefit of priority based on Japanese Patent Application No. 2011-114814 filed on May 23, 2011. The entirety of the specification of Japanese Patent Application No. 2011-114814 filed on May 23, 2011 is incorporated herein for reference.

INDUSTRIAL APPLICABILITY

[0040] The container for coating tool of the present invention can be preferably used in particular for applying a medicinal liquid to a narrow site. It should be noted that the usage of the container for coating tool of the present invention is not limited to applying a medicinal liquid, but the container for coating tool of the present invention can be used for applying a gel such as an antipruritic agent.

DESCRIPTION OF SYMBOLS

[0041]

10	container body
11	barrel
12	mouth
13	male screw
20	plug
21	skirt part
22	flange
23	shoulder
23a	engagement rib
23b	engagement part
24	nozzle cylinder
24a	outlet hole
24b	engagement rib
30	coating tool
31	coating tool part
31a	annular projections
31b	grooves
32	flange
40	attachment ring
41	body part
41a	engagement part
42	confining part
42a	press rib
50	cap
51	roulette
52	female screw
53	seal ring
53a	projection
53b	projection
53c	seal ring
54	protection skirt
55	restriction skirt
56	space

CLAIMS

- [Claim 1] An container for coating tool comprising:
a container body in which a medicinal liquid is stored;
an inside plug which includes a nozzle cylinder and which is pressed into a mouth of the container body;
an coating tool using a sponge member in which interconnecting cells are formed, the coating tool including an coating tool part which covers the nozzle cylinder; and
a cap which is detachably mounted to the mouth, wherein
the inside plug includes an outlet hole for the medicinal liquid which is open at a leading end of the nozzle cylinder, and
the cap is configured to, when mounted to the mouth, close the outlet hole by pressing the coating tool part at a leading end face of the nozzle cylinder, and is configured to, when removed from the mouth, open the outlet hole to allow the medicinal liquid to ooze to a surface of the coating tool part.
- [Claim 2] The container for coating tool according to claim 1, wherein
on an outer face of the coating tool part, a plurality of annular projections projecting in series toward a circumference direction are provided.
- [Claim 3] The container for coating tool according to claim 1, wherein
on an outer face of the coating tool part, a plurality of grooves recessed in series in a symmetry axis direction are provided.
- [Claim 4] The container for coating tool according to claim 1, wherein
the coating tool includes a flange extending toward an outer circumference circumference direction formed at a lower end of the coating tool part, and is fixed to the inside plug via an attachment ring which confines the flange to a shoulder of the inside plug on which the nozzle cylinder stands.
- [Claim 5] The container for coating tool according to claim 4, wherein
on an outer face of the coating tool part, a plurality of annular projections projecting in series toward a circumference direction are provided.
- [Claim 6] The container for coating tool according to claim 4, wherein
on an outer face of the coating tool part, a plurality of grooves recessed in series in

a symmetry axis direction are provided.

[Claim 7] The container for coating tool according to any one of claims 1 to 6, wherein on an outer face of the nozzle cylinder, one or more ribs projecting in series toward a circumference direction for engaging the coating tool part are provided.

[Claim 8] The container for coating tool according to claim 7, wherein inside the cap, a protection skirt which houses the coating tool part is provided so as to hang.

[Claim 9] The container for coating tool according to any one of claims 1 to 6, wherein inside the cap, a protection skirt which houses the coating tool part is provided so as to hang.