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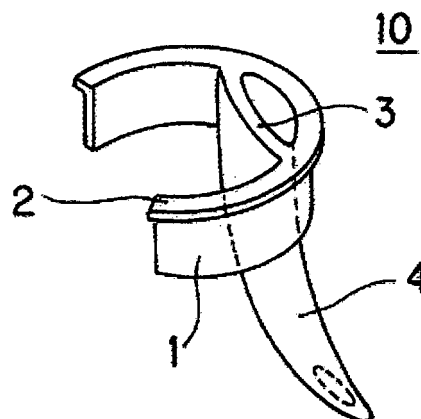
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(54) **SPOUT FITTING AND CONTAINER**

(57) A spout fitting apparatus being fixed easily to the spout of a container such as a plastic bottle and a bottle such that the cap of an existing container can be employed, as it is, under fixed state without falling into the container, and fluid flows out smoothly from the container at the time of pouring while preventing a hiccupping phenomenon due to interruption of fluid flow and preventing fluid from scattering to the surroundings of the container, comprising: a locking portion 1 locking to the spout of a container, an falling-prevention stopper 2 provided at the upper edge of the locking portion 1 and preventing the fitting from dropping into the container, a partition wall 3 bonded to the locking portion 1 and separating the fluid outflow path from the inside of the container and an air inflow path from the outside of the container, and an air inflow conduit 4 for extending the opening from the air inflow path side of the partition wall 3 and connecting it to the inside of the container. A container is also provided.

FIG. 1



Description

[TECHNICAL FIELD OF THE INVENTION]

[0001] The present invention relates to a spout fitting apparatus and a container having its spout shaped like a spout fitting apparatus, especially for a spout fitting apparatus can be easily attached to a container, such as a plastic bottle and a bottle.

[BACKGROUND OF THE INVENTION]

[0002] When pouring out the fluid from a container, such as a plastic bottle, a bottle or a can, the inside of the container becomes negative pressure since the spout of the container is stuffed up with the fluid because of the width of the spout and the viscosity of the fluid itself, when the fluid pours and flows out from the container. For the above-mentioned reason, once the outflow of the fluid stops, the container inhales the air of the same volume as the discharged fluid from the container. Because such a phenomenon occurs repeatedly, the fluid flows out from the container little by little. This phenomenon is called a "Hiccup phenomenon". When "Hiccup phenomenon" occurs, it takes much time to pour the fluid from the container and also the fluid flowing out from the container scatters and bounds. It may cause to spoil surrounding area of the container.

In order to solve the above-mentioned problems, Japan patent publication number "JP2005-41570" (hereafter called Patent document 1) discloses that the method of securing the airflow path by inserting a straw into an instrument, which can hold the straw, attached on the spout of a plastic bottle or a bottle.

Further, Japan patent publication number "JP2002-249138" (hereafter called Patent document 2) discloses that an attachment attached on the inside of the spout or neck of the spout of a bottle is fitted to a pipe connecting the air trap and the part within a 3 cm radius around a spout of a plastic bottle or a glass bottle.

[Patent document 1] JP2005-041570

[Patent document 2] JP2002-249138

[DISCLOSURE OF INVENTION]

[OBJECT OF THE INVENTION]

[0003] However, among the prior art listed above, according to the Patent document 1 which discloses an instrument that holds the straw in order to secure the airflow path from the inside of the container, there is a deficiency of being easily come off when the attached straw begins to pour the fluid from the container.

And, according to the Patent document 2 which discloses an attachment attached on the inside of the spout or neck of the spout of a bottle is fitted to a pipe connecting the air trap and the part within a 3 cm radius around a spout of a plastic bottle or a glass bottle, there is a deficiency

that an original cap is not able to use as a usual tab when the size of the stopper is bigger than that of the spout. Further, there is a deficiency that the stopper falls into the container when the size of the stopper is smaller than that of the spout.

The purpose of the present invention is to provide a spout fitting apparatus and a container having same construction as a spout fitting apparatus integrally which is very easy to attach on the spout of the container such as a plastic bottle or a bottle without falling into a container and a consumer can use an original cap of a plastic bottle or a bottle as a usual tab, further by attaching the spout fitting apparatus at the spout of the container, the flow of the fluid becomes smoothly without occurring Hick-up phenomenon when pouring or flowing out the fluid from the container, so that it can prevent from scattering fluid around the container.

[SUMMARY OF THE INVENTION]

[0004] To solve the above-mentioned problems, the present invention given in claim 1 is characterized by a spout fitting apparatus attached with a opening of the container such as a plastic bottle or a bottle comprising: a locking portion locking to the spout of a container, a falling prevention stopper provided at the upper edge of the locking portion, a partition wall bonded to the locking portion and separating the fluid outflow path from the inside of the container, and an air inflow conduit for extending the opening from the air inflow conduit side of the partition wall and connecting it to the inside of the container, wherein the spout fitting apparatus is fixed easily to the spout of the container such as a plastic bottle or a bottle.

[0005] To solve the above-mentioned problems, the present invention given in claim 2 is characterized by the spout fitting apparatus in accordance with claim 1, wherein the locking portion adheres to the inner wall of the spout of the container at least more than semicircle of the spout and has the elastic force to the direction which extends to the inner wall of the spout.

[0006] To solve the above-mentioned problems, the present invention given in claim 3 is characterized by the spout fitting apparatus in accordance with claim 1 or 2, wherein the air inflow conduit curves along the inclination of the inside of the container, and a head of the air inflow conduit extends to the shoulder part of the container.

[0007] To solve the above-mentioned problems, the present invention given in claim 4 is characterized by the spout fitting apparatus in accordance with claim 3, wherein the opening of the head of the air inflow conduit is cut crosswise in order to face to the inner wall of the container.

[0008] To solve the above-mentioned problems, the present invention given in claim 5 is characterized by a container having a spout, such as a plastic bottle or a bottle, comprising: a partition wall connected with the spout of the container and separating the outflow path of

the fluid from the inside of the container and the inflow path of the air from the outside of the container, and an air inflow conduit for extending the opening from the air inflow conduit side of the partition wall and connecting it to the inside of the container.

[EFFECT OF THE INVENTION]

[0009] According to the present invention, the spout fitting apparatus is designed as described in the above explanation, it is very easy to attach on the spout of the container such as a plastic bottle or a bottle without falling into a container and a consumer can use an original cap of a plastic bottle or a bottle as a usual tab. By attaching the spout fitting apparatus at the spout of the container, the flow of the fluid becomes smoothly without occurring hick-up phenomenon when pouring out the fluid from the container, so that it can prevent from scattering fluid around.

Further, according to the present invention, since the spout fitting apparatus is designed as described in the above explanation, the flow of the fluid becomes smoothly without occurring hick-up phenomenon when pouring out the fluid from the container with the pouring part located upwards, so that it can prevent from scattering fluid around.

[BRIEF DESCRIPTION OF THE DRAWINGS]

[0010]

Fig. 1 shows a schematic perspective view of the present invention "Spout fitting apparatus".

Fig. 2 shows a schematic perspective view of the present invention "Spout fitting apparatus" attached with the spout of the container, such as a plastic bottle and a bottle, pouring out the fluid from the spout.

[DESCRIPTION OF NUMERALS]

[0011]

- 1 Locking portion
- 2 Falling-prevention stopper
- 3 Partition wall
- 4 Air inflow conduit
- 10 Spout fitting apparatus
- 20 Container
- 21 Spout
- 22 Shoulder

[BEST MODE OF CARRYING OUT THE INVENTION]

[0012] The present invention will be explained hereunder in detail based upon examples with reference to the accompanying drawings.

Fig. 1 shows a schematic perspective view of the present invention "Spout fitting apparatus" and Fig. 2 shows a

schematic perspective view of the present invention "Spout fitting apparatus" attached with the spout of the container, such as a plastic bottle and a bottle, pouring out the fluid from the spout.

As shown in Figs. 1 and Fig. 2, a spout fitting apparatus 10 in the present invention consists of locking portion 1, falling-prevention stopper 2, partition wall 3 and air inflow conduit 4. The container 20, which is usually known as a plastic bottle or a bottle, consists of spout 21 and shoulder 22.

[0013] In the present invention, the locking portion 1 of the spout fitting apparatus 10 comprises a tubular type of vertical division so that it can insert in the spout 21 of the container 20 and has the elastic force to the direction that extends to the inner wall of the spout 21. Therefore, the spout fitting apparatus can be easily attached with various sizes of the spout of containers. The locking portion 1 of the spout fitting apparatus 10 adheres to the inner wall of the spout 21 of the container 20 at least more than semicircle of the spout 21 when the locking portion 1 is inserted in the spout 21 of the container 20. The falling-prevention stopper 2 is provided at the upper edge of the locking portion 1. When the locking portion 1 is inserted in the spout 21 of the container 20, the falling-prevention stopper 2 is hooked up with the upper edge of the spout 21 so that the spout fitting apparatus does not fall into the container 20.

[0014] The partition wall 3 is formed in the locking portion 1 in order to separate the outflow path of the fluid from the inside of the container 20 and the inflow path of the air from the outside of the container 20 and the air inflow conduit 4 is extended inside the container 20 from the air inflow side. The air inflow conduit 4 curves along the inclination of the inside of the container 20, and the head of the air inflow conduit 4 extends to the shoulder part of the container 20. The opening of the head of the air inflow conduit 4 is cut crosswise in order to face to the inner wall of the container 20 so that inflowing of the air from the outside to the shoulder 22 is performed easily. Since the partition wall 3 does have the predetermined curvature against the locking portion 1, it does not become an obstacle by bending easily even if the diameter of the spout 21 of the container 20 is small.

[0015] If the direction to which the spout fitting apparatus 10 attached is turned upward and the fluid inside of the container 20 is poured out, when the spout fitting apparatus 10 is inserted in the spout 21 of the container 20 and the locking portion 1 is attached with the upper edge of the spout 21, the air comes into the inside of the container 20 through the air inflow conduit 4 from the air inflow path located at the upper side of the partition wall 3 and the fluid inside of the container comes out continuously through the lower side of the partition wall 3. Therefore, the flow of the fluid is stabilized and the hiccup phenomenon does not occur so that the fluid flows out smoothly without scattering around.

[0016] When the spout fitting apparatus 10 is attached to the container 20, most part of the spout fitting appa-

ratus 10 is stored in the container 20 except for the slight part of falling-prevention stopper 2 because of its thickness. Therefore, after attaching the spout fitting apparatus 10 with the spout 21, it does not become obstructive and the original cap is used as it is.

[0017] In the present invention, the spout fitting apparatus can be formed by thermoplastics, such as polyethylene, polystyrene, and nylon. The locking portion 1 has elasticity and the spout fitting apparatus has a suitable length. Therefore, it can be adapted for change of various diameter of the spout 21, and can use in common with various containers 20.

[0018] According to the construction of the present invention "spout fitting apparatus 10" designed as described in the above, by attaching the spout fitting apparatus 10 at the spout 21 of the container 20, the flow of the fluid becomes smoothly without occurring hick-up phenomenon when pouring out the fluid from the container 20, so that it can prevent from scattering fluid around and it does not take much time in order to pour the fluid from the container 20.

According to the present invention, the locking portion 1 has elasticity and the spout fitting apparatus has a suitable length. Therefore, it can be adapted for change of various diameter of the spout 21, and can use in common with various containers 20. And, the falling-prevention stopper 2 is so that the spout fitting apparatus does not fall into the container 20. And, most part of the spout fitting apparatus 10 is stored in the container 20 except for the slight part of the falling-prevention stopper 2 because of its thickness so that it does not become obstructive and the original cap is used as it is. Further, the spout fitting apparatus weights very light and can be manufactured at low cost. Therefore, there is no substantial burden of the user by attaching the spout fitting apparatus with a plastic bottle or a bottle.

[0019] Although the above explanation was described about the spout fitting apparatus, if the structure of the spout of the container as same as the spout fitting apparatus is formed integrally when manufacturing, the container also has the same effect as of the spout fitting apparatus. Since the above-mentioned construction can be manufactured easily by using thermoplastic resin etc. and a die. Therefore, it is not expensive considering the structure of the spout fitting apparatus and large-scale production will be possible.

[INDUSTRIAL APPLICABILITY]

[0020] The present invention "Spout fitting apparatus and container" can be used for a plastic bottle and a bottle containing water, fruit juice, fluid seasoning, oil, paint, fluid detergent, and medicine, and can use the container of this invention by a wide range of industrial fields.

Claims

1. A spout fitting apparatus attached with an opening of the container such as a plastic bottle or a bottle comprising:

a locking portion locking to the spout of a container,
a falling-prevention stopper provided at the upper edge of the locking portion,
a partition wall bonded to the locking portion and separating the fluid outflow path from the inside of the container, and
an air inflow conduit for extending the opening from the air inflow conduit side of the partition wall and connecting it to the inside of the container,

wherein the spout fitting apparatus is fixed easily to the spout of the container such as a plastic bottle or a bottle.

2. The spout fitting apparatus in accordance with claim 1,
wherein the locking portion adheres to the inner wall of the spout of the container at least more than semicircle of the spout and has the elastic force to the direction which extends to the inner wall of the spout.

3. The spout fitting apparatus in accordance with claim 1 or 2,
wherein the air inflow conduit curves along the inclination of the inside of the container, and
a head of the air inflow conduit extends to the shoulder part of the container.

4. The spout fitting apparatus in accordance with claim 3,
wherein the opening of the head of the air inflow conduit is cut crosswise in order to face to the inner wall of the container.

5. A container having a spout such as a plastic bottle or a bottle comprising:

a partition wall connected with the spout of the container and separating the outflow path of the fluid from the inside of the container and the inflow path of the air from the outside of the container, and
an air inflow conduit for extending the opening from the air inflow conduit side of the partition wall and connecting it to the inside of the container.

FIG. 1

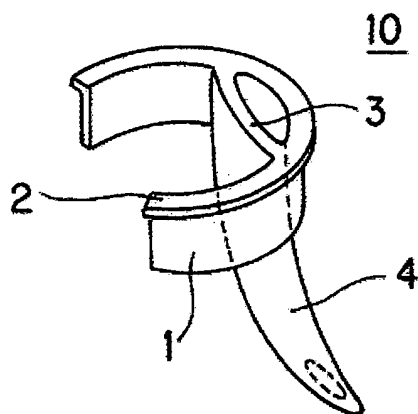
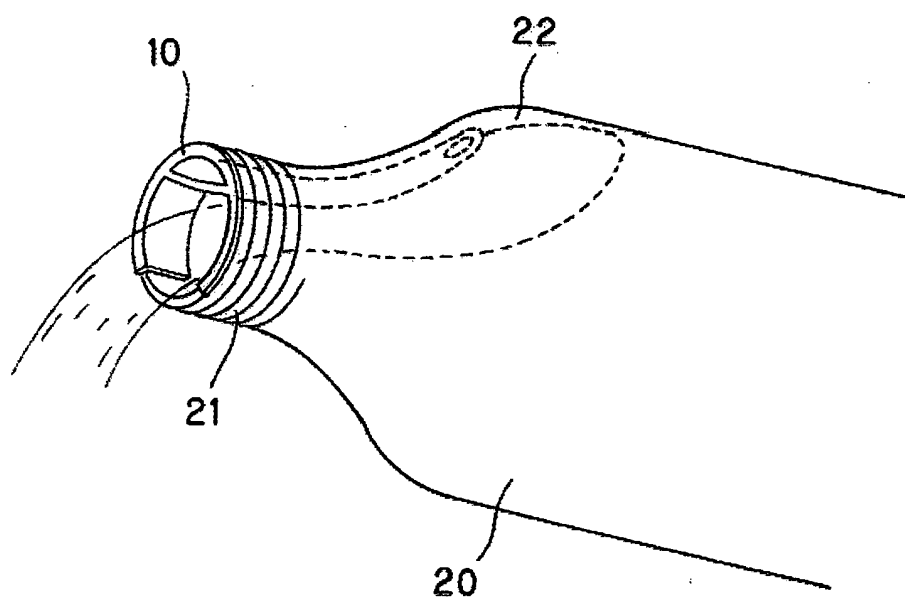


FIG. 2



INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2006/304094

A. CLASSIFICATION OF SUBJECT MATTER B65D23/00 (2006.01), B65D23/04 (2006.01), B65D47/06 (2006.01)		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) B65D23/00, B65D23/04, B65D47/06		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched Jitsuyo Shinan Koho 1922-1996 Jitsuyo Shinan Toroku Koho 1996-2006 Kokai Jitsuyo Shinan Koho 1971-2006 Toroku Jitsuyo Shinan Koho 1994-2006		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	JP 3047256 U (Kazuya YAMANAKA), 10 April, 1998 (10.04.98), Full text; Figs. 1 to 2 (Family: none)	5 1-4
Y	JP 09-118338 A (Mamoru UMEYAMA), 06 May, 1997 (06.05.97), Par. No. [0011]; Fig. 13 (Family: none)	1-4
☒ Further documents are listed in the continuation of Box C. ☐ See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 29 March, 2006 (29.03.06)		Date of mailing of the international search report 11 April, 2006 (11.04.06)
Name and mailing address of the ISA/ Japanese Patent Office		Authorized officer
Facsimile No.		Telephone No.

Form PCT/ISA/210 (second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2006/304094

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CD-ROM of the specification and drawings annexed to the request of Japanese Utility Model Application No. 062546/1992 (Laid-open No. 018262/1994) (Cosmo Sekiyu Kabushiki Kaisha), 08 March, 1994 (08.03.94), Par. Nos. [0014] to [0023]; Figs. 1 to 10 (Family: none)	1-4
A	Microfilm of the specification and drawings annexed to the request of Japanese Utility Model Application No. 013145/1986 (Laid-open No. 125729/1987) (Fuji Heavy Industries Ltd.), 10 August, 1987 (10.08.87), Full text; Figs. 1 to 5 (Family: none)	1-5

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- JP 2005041570 A [0002] [0002]
- JP 2002249138 A [0002] [0002]