Title: CONTAINER PLUS SYRINGE SYSTEM

Abstract: The present invention relates to a container plus syringe system which is easy to grab when used wherein a pharmaceutical composition contained in a syringe is easily introduced into a container by pushing the needle part in the needle case thereby mixing said pharmaceutical composition contained in a syringe with a pharmaceutical composition contained in said container followed by removing both said needle case part and said syringe part and storing said container containing said mixture in an upright position.
TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
CONTAINER PLUS SYRINGE SYSTEM

TECHNICAL FIELD

The present invention relates to a container plus syringe system, and more particularly, to a container plus syringe system capable of separately charging and storing two different medicaments in a container and a syringe, which secures safety and stability of medicaments, prevents medicaments from contamination by microorganisms or environmental pathogens, facilitates its use to mix medicaments, and eventually, optimizes the efficiency and preservation of health.

BACKGROUND ART

Due to low stability, medicaments, which are stored separately and mixed or dissolved in fluid either prior to or during administration, are in the form of powers, solutions, lyophilized cakes, or tablets. However, since these medicaments are stored separately and mixed either prior to or during administration, there is a possibility that the contents may be contaminated by microorganisms or environmental pathogens or require a high manufacturing cost, thus being insufficient for practical uses. Further, a clinician or a technician may be able to reduce the likelihood of contamination but the risk still exists. Then, it may be much harder for patients or the old and the weak to use such products and avoid the contamination.

Additionally, the use of pre-filled syringes having two separate storages requires high cost of manufacture and maintenance, is limited only to an intravascular administration, and is difficult to be properly packaged and used
because a container and a syringe are prepared separately.

**DISCLOSURE OF INVENTION**

Accordingly, to overcome the aforementioned problems, it is an object of the present invention to provide a container plus syringe system the use of which comprising steps of pressing a needle part mounted between a needle case and a syringe with ease, mixing two medicaments by injecting a medicament in a syringe into a medicament in a container, removing the needle case and the syringe, and holding the container containing mixed medicaments safely with a support as well as gripping the same conveniently with a finger grip.

The present invention is described in more detail hereunder. The container plus syringe system of the present invention comprises: a container containing one medicament wherein one side is clogged by a content discharging member and the other side by a rubber stopper; a syringe containing the other medicament wherein one side is sealed by a rubber stopper and the other by a content pressurizing member; a needle part having a double-edged needle; and a needle case connecting the container and the syringe, where the medicament in the syringe is injected by pressing the content pressurizing member into the medicament in the container to mix employing the needle case.

The container containing the mixed medicaments is stored by holding the rubber stopper thereof safely with a support.

The content discharging member of the container may be a spray nozzle, a seal with brush, or a dropper, or a special seal with ball type or sponge type.
The syringe comprises: a glass tube containing a medicament; a plunger rubber at the front end to charge the medicament; a plunger rod combined with the plunger rubber; a rubber stopper to seal the front end of the glass tube; an aluminum cap to cover the rubber stopper except the center thereof; and a finger grip connected to the terminal end of the glass tube and supporting fingers when the plunger rod is pressed.

The plunger rubber is mounted on a screw of a plunger rod.

The rubber stopper includes 3 protruded support hump sides at equal intervals at the site inserted into the front end of the glass tube.

The needle case comprises two portions: a portion where the needle case is connected with the container, and a portion with a certain length as a body of the needle where the needle case is connected with the syringe.

The inner diameter portion of the needle case includes a first internal catching projection to set up the first insertion position of the rubber stopper of the syringe at the terminal end, and two axially-spaced, generally parallel, second internal catching projections to set up the first setting position of the needle part at a middle portion of the needle case.

The needle part comprises a cylindrical body to be positioned at the second internal catching projections of the inner diameter portion of the needle case; and a needle with a certain length inserted piercing through the cylindrical body wherein one side is toward the rubber stopper of the container and the other is toward the rubber stopper of the syringe.

The support 26 to stand the container on end comprises a tube holding portion having internal round jaw and certain height at the upper side to insert the
rubber stopper, and a flat portion having wider area at the bottom side.

**BRIEF DESCRIPTION OF DRAWINGS**

Fig. 1 is a perspective view showing the entire constitution of the container plus syringe system according to the present invention;

Fig. 2 is a cross-sectional perspective view showing the assembly of the container plus syringe system according to the present invention;

Fig. 3 is a cross-sectional view of the container plus syringe system according to the present invention wherein a medicament in the container and a medicament in the syringe are confined to its respective place ready to be mixed;

Fig. 4 is a cross-sectional view showing the combined state among the container, needle part and syringe of the container plus syringe system according to the present invention;

Fig. 5 is a cross-sectional view after mixing a medicament in the container and a medicament in the syringe of the container plus syringe system according to the present invention;

Fig. 6 is a partial sectional view showing the container containing the mixed medicaments of the container plus syringe system according to the present invention;

Fig. 7 is a cross-sectional perspective view showing the needle part of the container plus syringe system according to the present invention;

Fig. 8 is a perspective view showing the rubber stopper of the syringe of the container plus syringe system according to the present invention;

Figs. 9a-9d are perspective views showing the rubber stopper of the container of the container plus syringe system according to the present invention; and
Fig. 10 is a cross-sectional perspective view showing the combined state between the syringe body and the finger grip of the container plus syringe system according to the present invention.

EXAMPLES

The objectives and other advantages of this invention will be further understood with reference to the following detailed description of drawings.

Fig. 1 is a perspective view showing the entire constitution of the container plus syringe system according to the present invention.

In Fig. 1, a needle case 12 interconnects a container 10, a syringe 11 and a needle part 24 and serves as a place where a medicament filled in a container 10 and a medicament filled in a syringe 11 are admixed in the container 10.

The container 10 is sealed one side with a content discharging member such as a spray nozzle, a seal with brush, a dropper, and a special seal with ball or sponge, and the other side with a rubber stopper 13a and an aluminum cap 14a to store the medicament safely.

The aluminum cap 14a covers the rubber stopper 13a except the center thereof to rupture the rubber stopper with a needle.

The spray nozzle 16 is applied for the content discharging member and the reference number 17 represents a clear cap capable of closing the spray nozzle 16.

The syringe 11 comprises a glass tube 18 which is a main body of the syringe; a plunger rubber 19 at the front end to administer the medicament; a plunger rod 20 where users directly provide pressure; and a finger grip 21 connected to the terminal end of the glass tube 18 and supporting fingers when the plunger rod is pressed.
The glass tube 18 wherein one side is clogged by the plunger rubber 19, the other side is sealed by a rubber stopper 13b and aluminum cap 14b to prevent the discharge of contents in the glass tube 18 unless the plunger rod 20 is operated.

The needle 15 may rupture the center of the aluminum cap 14b to release the contained composition in the glass tube and the plunger rubber 19 is mounted on a screw of the plunger rod 20 to hold firmly each other while the operation of the plunger rod 20.

The finger grip 21 has a polygonal shape which is close to a circle, preferably a hexagonal shape, to place fingers freely during the operation of the plunger rod 20.

The needle case 12 having a cylindrical body comprises an outer diameter portion 22 to insert the rubber stopper 13a of the container and an inner diameter portion 23 having a certain length as a body of the needle.

The needle part 24 holding a needle 15 is installed to release the medicament in the syringe 11 into the medicament in the container inside of the inner diameter portion 23.

The needle part 24, which is installed inside of the inner diameter portion 23 of the needle case 12, is movable so that the needle piercing the cylindrical body has a double ended needle assembly, of which one end is toward the rubber stopper 13a of the container 10 and the other is toward the rubber stopper 13b of the syringe 11, to penetrate simultaneously the rubber stoppers 13a and 13b.

Fig. 2 is a sectional perspective view showing the combined state of the container plus syringe system according to the present invention.

As in Fig. 2, the rubber stopper 13a of the container 10 and the aluminum cap 14a are attached to the outer diameter portion 22 of the needle case 12 and the rubber
stopper 13b of the syringe 11 and the aluminum cap 14b are attached to the inner diameter portion 23. Further, the needle part 24 is installed at the middle portion of the inner diameter portion 23 of the needle case 12.

The rubber stopper 13a of the container 10 and the aluminum cap 14a are inserted into the third internal catching projection 25c formed in the outer diameter portion 22, while the rubber stopper 13b of the syringe 11 and the aluminum cap 14b are positioned at the first internal catching projection 25a of the inner diameter portion 23 and the needle part 24 is positioned at the two axially-spaced, generally parallel, second internal catching projection 25b formed in the middle of the inner diameter portion 23.

When entire elements for the container plus syringe system are assembled, each medicament contained in the container and the syringe may be mixed.

Fig. 3 is a sectional view prior to mixing a medicament in the container and a medicament in the syringe of the container plus syringe system according to the present invention.

As in Fig. 3, the container 10 and the syringe 11 having the needle case 12 inbetween are firmly positioned by each catching projections, 25a, 25b, and 25c.

Fig. 4 is a sectional view showing the combined state among the container, needle part and syringe of the container plus syringe system according to the present invention.

As in Fig. 4, when the glass tube 18 of the syringe 11 is pressed in the direction of arrow, the needle part 24 is moved along with the glass tube 18 to the same direction, the rubber stopper 13a of the container 10 and the aluminum cap 14a, needle part 24 and the rubber stopper 13b of the syringe 11 and the aluminum cap
14b are closely contacted, and the needle, simultaneously, penetrates the rubber stoppers, 13a and 13b, which are held by the aluminum cap.

Fig. 5 is a sectional view after mixing a medicament in the container and a medicament in the syringe of the container plus syringe system according to the present invention.

As in Fig. 5, when the needle 15 penetrates the seals of the container and the syringe and the plunger rod 20 is pressed in the direction of arrow, the content within the syringe is moved and mixed into the content within the container.

Since two contents are mixed at the sealed condition as described above, it prevents the contamination by microorganisms or environmental pathogens, thus securing the stability of the medicaments to be delivered to patients.

Further, since the proper mixing is controlled by the operation of the plunger rod 20 after pressing the syringe a little bit, it may be performed easily by any ordinary person such as patients who do not have high-tech facilities or skills.

Fig. 6 is a partial sectional view showing the container containing the mixed medicaments of the container plus syringe system according to the present invention.

As in Fig. 6, the container containing the mixed contents may be stored by sealing the rubber stopper which is held by the aluminum cap and held safely with the support 26.

The support 26 comprises a tube holding portion having internal round jaw 27 and certain height at the upper side to insert the rubber stopper and the aluminum cap and a flat portion having wider area at the bottom side to support safely.

Fig. 7 is a cross-sectional perspective view showing the needle part of the
container plus syringe system according to the present invention.

As in Fig. 7, the outer round of the cylindrical body of the needle case 24 is contacted with the inner round of the inner diameter portion 23 of the needle case 12, and the needle 15 piercing through the center of the body is held by a couple of projections 28 at the center of the body.

Fig. 8 is a perspective view showing the rubber stopper of the syringe of the container plus syringe system according to the present invention.

As in Fig. 8, the rubber stopper 13b includes three support humps 29a at 120° intervals at the site inserted into the glass tube 18.

Figs. 9a-9d are perspective views showing the rubber stopper of the container of the container plus syringe system according to the present invention.

As in Figs. 9a-9b illustrating the support humps, 29b, 29c, 29d, and 29e, inserted into the container 10, these support humps may be properly selected depend on containers, medicaments and the like.

Fig. 10 is a sectional perspective view showing the combined state between the syringe body and the finger grip of the container plus syringe system according to the present invention.

As in Fig. 10, the finger grip 21 is slidable mounted onto the outer diameter of the glass tube 18 by a base which may also include a ring 30 to prevent movement of the finger grip 21 too far down the glass tube 18.

INDUSTRIAL APPLICABILITY

The container plus syringe system of the present invention provides optimal stability and safety preventing contamination by microorganisms or environmental
pathogens, facilitates its use relating to mixing contents to be delivered, and simplifies the process to use after mixing contents, thus eventually, exhibiting improvement in preservation of health and effectiveness of treatments.
CLAIMS

What is claimed is:

1. A container plus syringe system comprising:
   a container containing one medicament wherein one side is clogged by a content discharging member and the other is sealed by a rubber stopper;
   a syringe containing the other medicament wherein one side is clogged by a content pressurizing member and the other is sealed by a rubber stopper;
   a needle part having a double-edged needle assembly; and
   a needle case connecting the rubber stopper portion of the container and the rubber stopper portion of the syringe where the content within the syringe is moved and mixed into the content within the container, when the syringe is pressed toward the container and the needle, simultaneously, penetrates the seals of the container.

2. The container plus syringe system of claim 1, wherein said container containing the mixed medicaments is stored by holding the rubber stopper portion thereof with a support.

3. The container plus syringe system of claim 2, wherein said support comprises a tube holding portion having internal round jaw and certain height at the upper side to insert the rubber stopper, and a flat portion having wider area at the bottom side to support safely.

4. The container plus syringe system of claim 1, wherein said content discharging member is selected from the group consisting of a spray nozzle, a seal with brush, a
dropper, a ball-typed seal, and a sponge-typed seal.

5. The container plus syringe system of claim 1, wherein said syringe comprises a glass tube containing a medicament; a plunger rubber at the front end to charge the medicament; a plunger rod combined with the plunger rubber and capable of manually-activated axial movement toward an axially opposed sealed end of the glass tube; a rubber stopper to seal the front end of the glass tube; an aluminum cap to cover the rubber stopper except the center thereof; and a finger grip connected to the terminal end of the glass tube and supporting fingers when the plunger rod is pressed.

6. The container plus syringe system of claim 1, wherein said needle case comprises an outer diameter portion as a rubber stopper receptor to insert the rubber stopper of the container, and an inner diameter portion having a certain length as a body of the needle to insert the rubber stopper of the syringe.

7. The container plus syringe system of claim 1, wherein said needle part comprises a cylindrical body to be positioned at the second internal catching projections of the inner diameter portion of the needle case; and a needle with a certain length inserted through the both sides of the cylindrical body wherein one side is toward the rubber stopper of the container and the other side is toward the rubber stopper of the syringe.
[Fig. 9a]

13a

29b

[Fig. 9b]

13a

29c

[Fig. 9c]

13a

29d
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC7 B65D 81/32

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)

IPC7 A61M, B01F, B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>US 6,149,623A (Duotec Medical Systems Inc.) 21 NOVEMBER 2000 See the whole document</td>
<td>1, 5</td>
</tr>
<tr>
<td>A</td>
<td>US 5,171,219A (Sumitomo Pharmaceuticals Co., Ltd.) 15 DECEMBER 1992 See the whole document</td>
<td>1</td>
</tr>
<tr>
<td>A</td>
<td>US 5,588,745A (Hwnmedica) 31 DECEMBER 1996 See the whole document</td>
<td>1, 7</td>
</tr>
</tbody>
</table>

Further documents are listed in the continuation of Box C.

See patent family annex.

Date of the actual completion of the international search


Date of mailing of the international search report


Name and mailing address of the ISA/KR

Korean Intellectual Property Office
920 Dunsan-dong, Seo-gu, Daejeon 302-701, Republic of Korea
Facsimile No. 82-42-472-7140

Authorized officer
SEO, Shin Hall
Telephone No. 82-42-481-5464

Form PCT/ISA/210 (second sheet) (July 1998)