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(51) INT CL:
B65D 81/32 (2006.01) ***A61J 1/20*** (2006.01)
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(56) Documents Cited:
GB 2158801 A
WO 2005/034861 A2
FR 002569666 A1
US 5419429 A
WO 2008/086797 A2
WO 2004/014739 A2
JP 2009057098 A

(58) Field of Search:
INT CL **A61J, B65D**
Other: **EPODOC & WPI**

(54) Title of the Invention: **An improved multi chamber container to prepare instant dose preparation**
Abstract Title: **Multi-chamber storage, mixing and drinking vessel for preparing a drug from liquid and powder**

(57) A multi chamber container 1 has: a bottom chamber 2 for holding a liquid 8; a top chamber 3 for holding a powder 7; a main cap 5 housing the top chamber and with an outlet 5a for allowing the consumer to access the mixed preparation; a smaller removable cap 6 closing the outlet; and, on top of the main cap, a pressing cover 4 with an elongate hollow stem which reaches the base of the top chamber, and an aperture to receive the outlet. Minimal pressure on the stem ruptures the edges of the bottom surface of the top chamber, leaving the surface hanging down and releasing the powder into the liquid. The consumer shakes the container to mix the components and removes the small cap to drink or pour the prepared admixture.

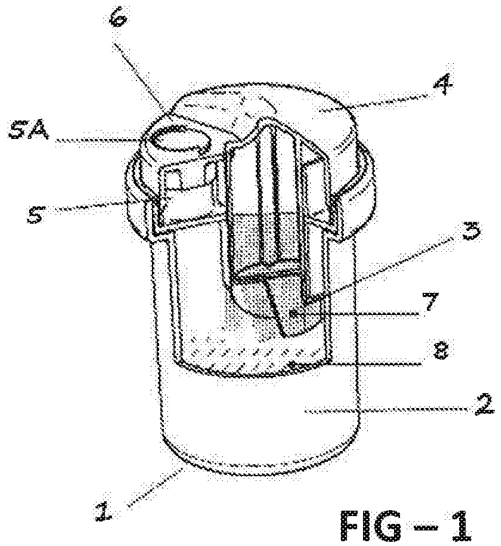

FIG – 1

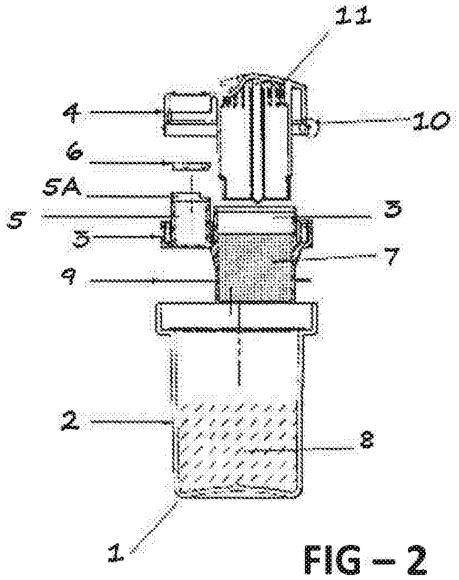

FIG – 2

GB 2525652 A

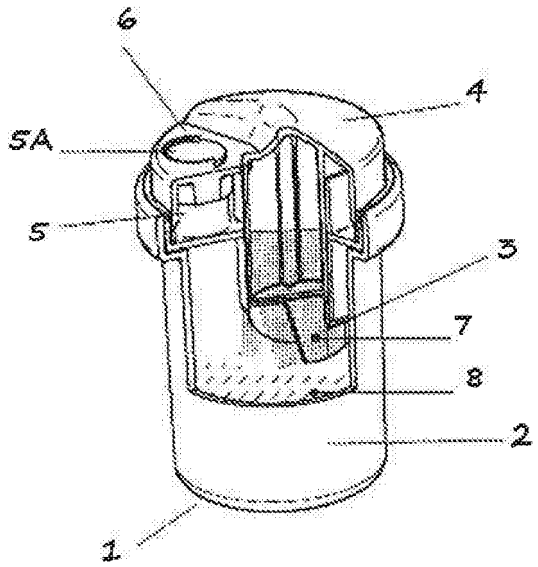

FIG – 1

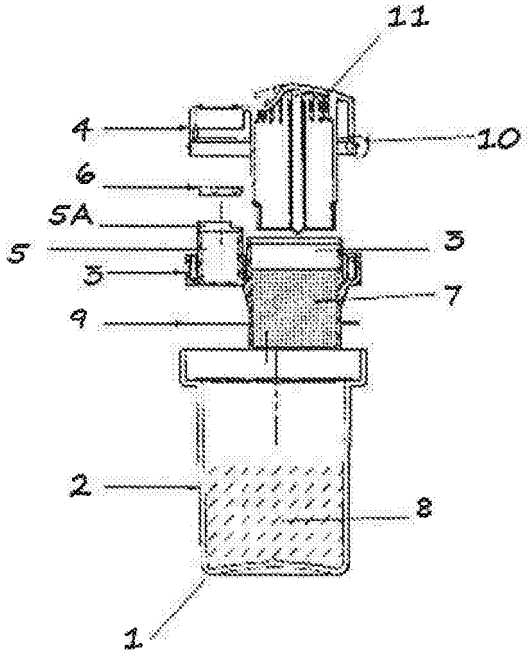

FIG – 2

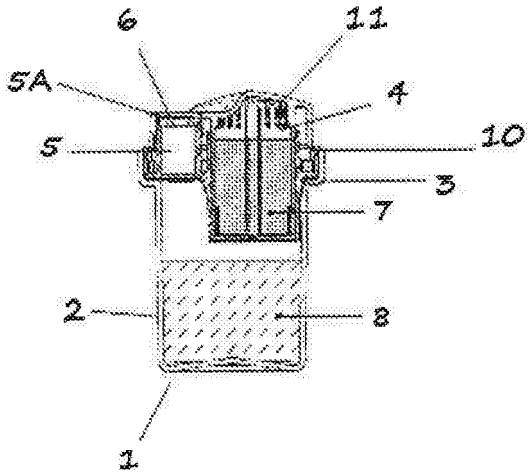

FIG – 3

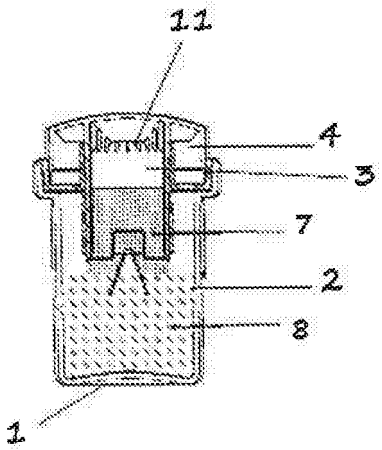

FIG – 4

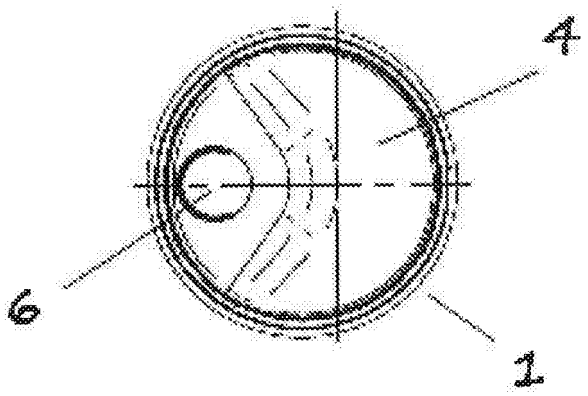

FIG – 5

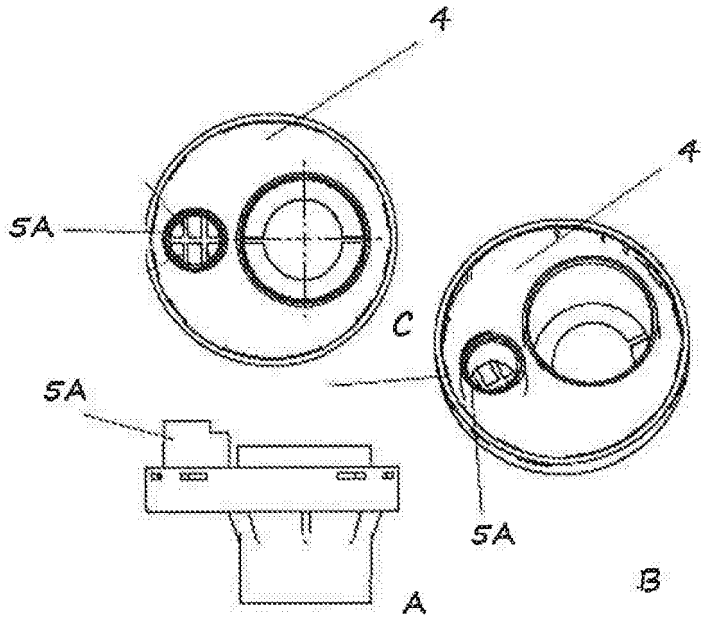

FIG – 6

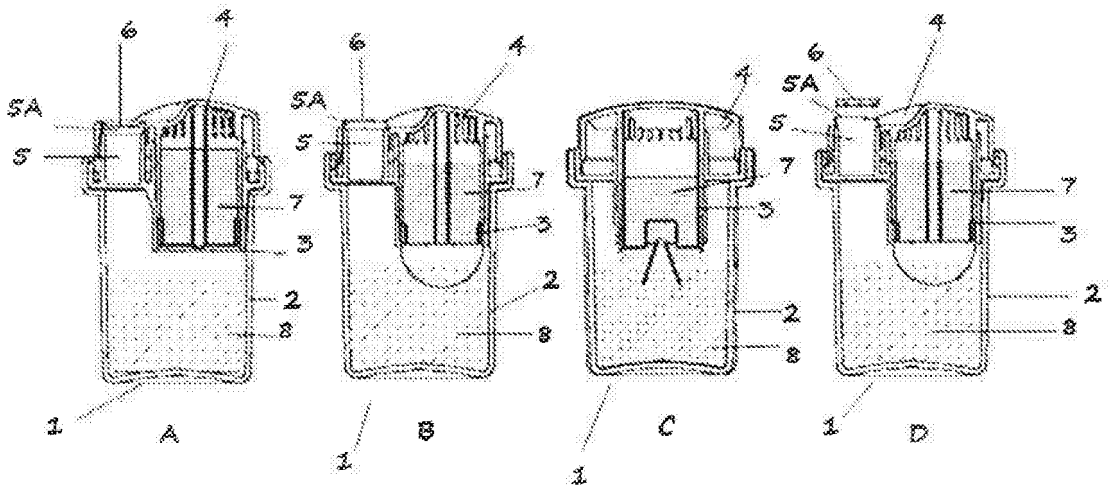

FIG - 7

AN IMPROVED MULTI CHAMBER CONTAINER TO PREPARE INSTANT DOSE PREPARATION

Field of Invention:

The present invention relates to an improved multi chamber container to prepare instant dose preparation. In particular, the present invention relates to an improved multi chamber container to prepare instant dose preparation having single step twisting mechanism allowing release of the desired dosage form to other dosage form in a single step to prepare the final dosage form just before use.

Background of Invention and prior art:

Drugs are available in different dosage forms out of which some drugs are the mixture of two or more dosage forms. Many times, these dosage forms are to be kept different and have to be mixed only at the time of the consumption by the patient. So, at the time of consumption, the patient has to manually mix the said dosage forms. Moreover, when the patient is outside it becomes difficult for him to mix the prescribed dosage forms without having any container. Further, dose accuracy is also not maintained in such cases.

There are many such containers are available in market for instantly mixing one or more dosage forms as mentioned below but they face certain problems which are also mentioned.

Indian patent no. IN254718 relates to a bottle, which contains two kinds of materials separately in two spaces in a bottle body and communicates the separated spaces with each other as necessary so that the two materials can be mixed together. This bottle has a bottle body having a mouth; an additive storage container including an insertion part inserted into the mouth, an exposed part exposed outside the mouth and an additive storage space defined therein; an opening unit tightened to the mouth; and separation

means for separating the additive storage container from the bottle body. But the said invention is comparatively very complex in mechanism which is not user friendly.

Indian patent no. IN243077 describes a device for dispensing a substance in fluid or powder form, the device comprising a dispensing outlet (10), an air blaster (20) for generating a blast of air when the device is actuated, and at least one reservoir (30) containing a single dose of substance, said reservoir (30) having an air inlet (31) connected to said air blaster (20), and a substance outlet (32) connected to said dispensing orifice (10), said air inlet (31) being provided with a substance retaining member (40) for retaining the substance in the reservoir (30) until it is dispensed, and said substance outlet (32) being closed off by a closure element (50), said dispenser device being characterized in that the closure element (50) is a spherical element, such as a ball, force fitted into the substance outlet (32) of the reservoir (30), said device further comprising a mechanical opening system (60, 70, 80) co-operating with said closure element (50) for ejecting it mechanically from its closure position when the device is actuated.

United states patent no. US4264007 describes a container providing for the separate storage of two materials and the admixing of the materials upon opening of the container. A main container holds a quantity of a first material, such as carbonated water, and a separate compartment holds a small quantity of a second material, such as a dipeptide sweetener flavoring. The disclosure provides several embodiments of the invention wherein a bottle has a compartmented closure applied as a cap thereto. The closure incorporates a compartment, which may be substantially cylindrically shaped, for the second material, and has a flexible top wall and a releasable bottom wall which is positioned within the neck of the bottle. An actuating rod extends through the compartment intermediate the flexible top wall to the releasable bottom wall whereby, when it is desired to admix the first and second materials, the flexible top wall is pressed down to force the actuating rod against the releasable bottom wall, thereby causing it to pivot open and release the second material within the compartment to admix with the first material in the bottle. In another embodiment of the invention the container is a can having a pull-top type opener, and in which a separate compartment in the shape of a cup is attached to the bottom of the can top closure beneath the pull-top opener and a dispensing orifice covered by the opener. As the pull-top opener is pulled open, the separate compartment tilts away from the can top

closure into the container thereby releasing the second material into the can while freeing the dispensing orifice. But there are high chances of the leakage and corrosion due to the road used in the mechanism. Further the cost is high comparatively.

United States patent no. US222-129 3 describes a mixing and dispensing container having a partition wedged within its interior -to divide it 'into two compartments, for the reception of two separate ingredients, and a dispensing nozzle slidably received above the partition in such a m-anner that the inner orifice of its dispensing channel is held closed by the partition and is thus protected from the danger lof being clogged by the contents of the container during storage. Threadably engaged over the open end of the container is a hard-topped screw cap, and when said cap -is tightened fully upon the container, it pushes the nozzle downwardly which in turn dislodges the partition to effect mixture of the ingredients in the container. At the same time the .inner orifice of the dispensing channel-is freed. But there are high chances of the corrosion due to the road used in the mechanism. Further the cost is high comparatively.

United States patent no. US6695173 describes a multiple-dose bottle with dosage nozzle for liquids, particularly for pharmaceutical products, is deformable and has a nozzle (2) which comprises a valve (3) made of flexible material which can be coupled to the mouth (4) of the bottle (1) and has a plurality of passages (5) for the flow of the liquid and a cap (6) made of substantially rigid material which is fitted hermetically on the valve (3) and is provided, in an upward region, with a dispensing opening (7), compression of the bottle (1) producing the compression of the valve (3), the flow of the liquid between the valve (3) and the cap (6), and the release of the liquid through the dispensing opening (7). But it has chances of corrosion, leakage and increased cost due to the parts used.

United States patent application no.US 20040188282 A1 describes a two piece sealed capsule that is inserted into a liquid bearing container wall or neck of a bottle, said capsule being a receptacle for sealably containing a liquid and/or dry material and a dispenser for releasing the material when desired into the container. The top of the capsule is depressed manually forcing a plunger tube connected to the bottom of the capsule to rip away the bottom and side portion dispensing the material. The present invention allows the use of materials that would discolor, degrade or interact with other substances when added to the

contents of the bottle, to remain stable and/or inactive until the time of use. But there are high chances of the corrosion and leakage due to the use of the plunger.

United States patent no. US7017735 describes a cap for use with a container includes a ring member having an opening and a capsule provided on the ring member. The capsule extends through the opening. A plunger is provided on an interior wall of the capsule. The capsule contains a substance, such as a water-dispersible liquid. The container having a main chamber and a mouth stores and serves a beverage. The main chamber is filled with a single strength beverage, and the capsule is filled with a water-dispersible liquid. The liquid may be a flavor such as, for example, citrus, cranberry, passion fruit, or carambola. The capsule is placed in the mouth of the container contiguous the main chamber, with the capsule being openable to inject the water-dispersible liquid into the single strength beverage in the main chamber in response to manual manipulation of the capsule. But it has a complex mechanism making it non user friendly. Further, it has high chances of the corrosion due to the use of the plunger. Moreover, leakage is also possible with the time.

United States patent no. US 7828140 B2 describes a cap with a storage space for containing a secondary material includes a storage portion having a storage space and provided with a seal plate formed on a lower end of the storage space, an outer cap foldably formed on the storage portion and coupled to a spouting portion, a spouting member inserted in the spouting portion, and an operational member for breaking the seal plate when the spouting member is in operation. But there are high chances of the leakage of the dosage form. It is simple in mechanism.

United States patent no. US6926138 describes a cap includes a plunger member including a cavity portion integral therewith and extending downwardly therefrom. The cavity portion is capable of containing additive therein and includes a lower portion having an opening for dispensing the additive into the container. A receiving member receives the plunger member and includes a threaded portion for engaging a container. A spring member is preferably disposed between the cavity portion and a neck portion and becomes compressed when the plunger member is moved towards a down position. A membrane preferably extends across an opening of a container and engages the opening of the cavity portion when the plunger member is at an up position. The membrane may be formed from aluminum foil so that it can be penetrated when the plunger member is moved to a down

position and to thereby allow the opening of the cavity to pass there below so that the additive can be introduced into a container. But it has high chances of the leakage and corrosion. Further, it is costly.

United States patent no. US6904867 describes a calculated medicine dose dispensing apparatus includes a medicine bottle and a calculated dose medicine dispenser specific to the medicine bottle and a particular medicine. The medicine bottle has a neck and a bottle cap installed on the neck. The dose dispenser includes a cup in the shape of a truncated cone with a large diameter open end and an end wall closing the small diameter end. The end wall has a circular indent defined by an indent sidewall. The dose cup fits on the bottle cap with the large open end facing down and the bottle cap frictionally installed in the cup indent. A dial assembly is installed on the dose cup on the exterior of the end wall. The dial assembly calculates the proper dose of the medicine for the patient according to a patient parameter such as weight. The dial assembly includes a dial and a data disc. The data disc is installed on the dose cup end wall and carries at least two information sets that are circularly arranged, spaced apart information bits. Each information bit of one set is functionally related to an information bit of the other set, such as patient weight to medicine dose. The dial includes a dial plate installed over the data disc. The dial plate has one sight window corresponding to each information set. Rotation of the dial plate over the data disc displays functionally related information bits in the sight windows. But it has a complex mechanism with high cost parts which increases the over all cost of the product.

Thus, there is a need to invent a

Disadvantages of the prior art:

The above mentioned inventions suffer from at least one of the following problems:

- They are comparatively very complex in mechanism which is not user friendly.
- High in cost.
- Difficult to operate making them non-user friendly.
- Higher chances of leakage.

- Many of them are hazardous.

- There are high chances of corrosion.

Objects of Invention:

The main object of the invention is to provide an improved multi chamber container to prepare instant dose preparation having single step twisting mechanism allowing release of the desired dosage form to other dosage form in a single step to prepare the final dosage form just before use.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which facilitates instant dose preparation.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which is user friendly.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which is economic.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which has simple mechanism.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which has attractive appearance so that easy to be adopted by the kids.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which is portable.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which is easy pull down mechanism.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which facilitates proper blending.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which is non biodegradable.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which is non reactive with the dosage form.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which is leakage free.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which is hazard free.

Yet another object of the invention is to provide an improved multi chamber container to prepare instant dose preparation which is accident free.

Brief description of drawings:

Fig.1: Shows perspective view of an improved multi chamber container to prepare instant dose preparation.

Fig.2: Shows fragmented view of an improved multi chamber container to prepare instant dose preparation.

Fig.3: Shows cross-sectional view of an improved multi chamber container to prepare instant dose preparation.

Fig.4: Shows cross-sectional view of an improved multi chamber container to prepare instant dose preparation showing the breaking of the bottom of the top chamber from two sides.

Fig. 5: Shows top view of the pressing cover.

Fig.6a: Shows top view of top chamber of an improved multi chamber container to prepare instant dose preparation.

6b: Shows perspective view of top chamber of an improved multi chamber container to prepare instant dose preparation.

6c: Shows top view of top chamber of an improved multi chamber container to prepare instant dose preparation.

Fig.7a- 7d: Shows stepwise process diagram of usage of an improved multi chamber container to prepare instant dose preparation.

Meaning of reference numerals used in Figures 1 to 7:

1	Multi chamber container
2	Bottom chamber
3	Top chamber
4	Pressing cover
5	cap
5a	Hollow gap
6	Small cap
7	Powder dosage form
8	Liquid dosage form

Detail Description of Invention:

The features, nature and advantages of the disclosed subject matter will become more apparent from the detailed description set forth below when taken in conjunction with the drawings in which like reference numerals identify correspondingly throughout.

Referring to fig. 2, the proposed improved multi chamber container (1) to prepare instant dose preparation is provided with two separate chambers to fill the desired dosage form in respective chamber. One of the said two chambers is a bottom chamber (2) for filling liquid dosage form (8) and another is a top chamber (3) for filling powder dosage form (7).

Referring to fig.6A to 6C, the cap (5) is provided having the said top chamber (3) and a hollow gap (5a) for allowing the consumer to consume the mixed dosage preparation. The small cap (6) is provided at the top of the hollow gap (5a) of the cap (5). Referring to fig.5,

Referring to fig.6A to 6C, the cap (5) is provided having the said top chamber (3) and a hollow gap (5a) for allowing the consumer to consume the mixed dosage preparation. The small cap (6) is provided at the top of the hollow gap (5a) of the cap (5). Referring to fig.5, the pressing cover (4) is provided having a long hollow shape part and a short hollow shape part.

Referring to fig.1, fig.3 and fig.4 the said pressing cover (4) is to be pressed just before consuming the final dosage form and gets fit on the cap (5) in a manner that a long hollow shape part of the said pressing cover (4) gets fit in the top chamber (3) and breaks the bottom of the top chamber (3) in a hanging manner to allow the powder dosage form (7) filled in the top chamber (3) to get mixed with the liquid dosage form (8) filled in the bottom chamber (2) whereby a short hollow shape part gets fit on the hollow gap (5a) of the cap (5) in a manner that on fitting the small cap (6) of the hollow gap (5a) comes out from the short hollow shape of the pressing cover (4). As the bottom of the top chamber (3) breaks by pressing cover (4) over the cap (5), the powder dosage form (7) filled in the top chamber (3) gets mixed with the liquid dosage form (8) filled in the bottom chamber (2) enabling a consumer to consume instantly mixed dosage form by shaking and opening the small cap (6).

Referring to fig. 4, on pressing the pressing cover (4) over cap (2), the bottom of the top chamber (3) breaks from the two sides in a hanging position and does not fall in the bottom chamber (2) and allows the powder dosage form (7) filled in the top chamber (3) gets mixed with the liquid dosage form (8) filled in the bottom chamber (2). As the bottom of the top chamber (3) breaks from the two sides it allow the powder dosage form (7) filled in the top chamber (3) to get fall from both the broken sides to the liquid dosage form (8) filled in the bottom chamber (2).

The force required to press the pressing cover (4) over cap (2) to breaks the bottom of the top chamber (3) to allow the powder dosage form (7) filled in the top chamber (3) gets mixed with the liquid dosage form (8) filled in the bottom chamber (2) is minimal. Thus, the present improved multi chamber container (1) allows the instant mixing of the multiple dosage form as and when required by the user anywhere anytime.

Working of Invention:

Referring to fig.7A, the pressing cover (4) is to be pressed just before consuming the final dosage form and gets fit on the cap (5) in a manner that a long hollow shape part of the said pressing cover (4) gets fit in the top chamber (3) and breaks the bottom of the top chamber (3) as shown in fig.7B in a hanging manner to allow the powder dosage form (7) filled in the top chamber (3) to get mixed with the liquid dosage form (8) filled in the bottom chamber (2) as shown in fig.7C,

whereby a short hollow shape part gets fit on the hollow gap (5a) of the cap (5) in a manner that on fitting the small cap (6) of the hollow gap (5a) comes out from the short hollow shape of the pressing cover (4). As the bottom of the top chamber (3) breaks by pressing cover (4) over the cap (5), the powder dosage form (7) filled in the top chamber (3) gets mixed with the liquid dosage form (8) filled in the bottom chamber (2) enabling a consumer to consume instantly mixed dosage form by shaking and opening the small cap (6) as shown in fig.7D. Thus, the present improved multi chamber container (1) allows the instant mixing of the multiple dosage form as and when required by the user anywhere anytime.

Having described what is considered the best form presently contemplated for embodying the present invention, various modifications and variations in its form of manufacture will be promptly apparent to those skilled in the art. Therefore, it is to be understood that the present invention is not limited to the practical aspects of the actual preferred embodiments hereby described and that any such modifications and variations must be considered as being within the spirit and the scope of the invention.

Advantages of present invention: -

- User friendly
- Economic
- Simple mechanism
- Attractive appearance so that easy to be adopted by the kids
- Portable

- Easy pull down mechanism

- Facilitates proper blending

- Fully utilizes predetermined dosage form

- Non biodegradable

- Non reactive with the dosage form

- Leakage free

- Hazard free

- Accident free

- Single step pressing mechanism allowing release of the desired dosage form to other dosage form in a single step.

CLAIMS:

1. An improved multi chamber container (1) to prepare instant dose preparation mainly comprises of:

   bottom chamber (2) for filling liquid dosage form (8);

   top chamber (3) for filling powder dosage form (7);

   cap (5) having the said top chamber (3) and a hollow gap (5a) for consuming the mixed dosage preparation having a small cap (6) and

   pressing cover (4) which is to be pressed just before consuming the final dosage form and gets fit on the cap (5) in a manner that a long hollow shape part of the said pressing cover (4) gets fit in the top chamber (3) and breaks the bottom of the top chamber (3) from the two sides in a hanging manner to allow the powder dosage form (7) filled in the top chamber (3) to get mixed with the liquid dosage form (8) filled in the bottom chamber (2) and a short hollow shape part gets fit on the hollow gap (5a) of the cap (5) in a manner that on fitting the small cap (6) of the hollow gap (5a) comes out from the short hollow shape of the pressing cover (4) enabling a consumer to consume the instantly mixed dosage form by shaking and opening the small cap (6).

2. An improved multi chamber container (1) to prepare instant dose preparation as claimed in claim 1, whereby on pressing the pressing cover (4) over cap (2), the bottom of the top chamber (3) breaks in a hanging position and does not fall in the bottom chamber (2).

3. An improved multi chamber container (1) to prepare instant dose preparation as claimed in claim 1, whereby the force required to press the pressing cover (4) over cap (2) is minimal.

4. An improved multi chamber container (1) to prepare instant dose preparation as claimed in claim 1, allows the instant mixing of the multiple dosage form.

CLAIMS:

1. An improved multi chamber container (1) to prepare instant dose preparation mainly comprises of:

   bottom chamber (2) for filling liquid dosage form (8);

   top chamber (3) for filling powder dosage form (7);

   cap (5) having the said top chamber (3) and a hollow gap (5a) for consuming the mixed dosage preparation having a small cap (6) and

   pressing cover (4) which is to be pressed just before consuming the final dosage form and gets fit on the cap (5) in a manner that a long hollow shape part of the said pressing cover (4) gets fit in the top chamber (3) and breaks the bottom of the top chamber (3) from the two sides in a hanging manner to allow the powder dosage form (7) filled in the top chamber (3) to get mixed with the liquid dosage form (8) filled in the bottom chamber (2) and a short hollow shape part gets fit on the hollow gap (5a) of the cap (5) in a manner that on fitting the small cap (6) of the hollow gap (5a) comes out from the short hollow shape of the pressing cover (4) enabling a consumer to consume the instantly mixed dosage form by shaking and opening the small cap (6).

2. An improved multi chamber container (1) to prepare instant dose preparation as claimed in claim 1, allows the instant mixing of the multiple dosage form.

Intellectual Property Office

Application No: GB1407707.7 **Examiner:** Andrew Hughes

Claims searched: 1 **Date of search:** 19 November 2014

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
A	-	GB 2158801 A (L'OREAL)
A	-	FR 2569666 A1 (L'OREAL)
A	-	US 5419429 A (ZIMMERMAN et al.)
A	-	JP 2009057098 A (YOSHINO KOGYOSHO KK)
A	-	WO 2008/086797 A2 (VIDOLOV) figure 3
A	-	WO 2004/014739 A2 (CONCEPT & DESIGN LTD.)
A	-	WO 2005/034861 A2 (THE BIO BALANCE CORPORATION)

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^{X} :

Worldwide search of patent documents classified in the following areas of the IPC

A61J; B65D

The following online and other databases have been used in the preparation of this search report

EPODOC & WPI

Intellectual Property Office

International Classification:

Subclass	Subgroup	Valid From
B65D	0081/32	01/01/2006
A61J	0001/20	01/01/2006
B65D	0051/28	01/01/2006