May 29, 1934. C. B. STRAUCH 1,960,858

COMBINATION OF TWO INCOMPATIBLES

Filed July 15, 1931

Fig. 1.

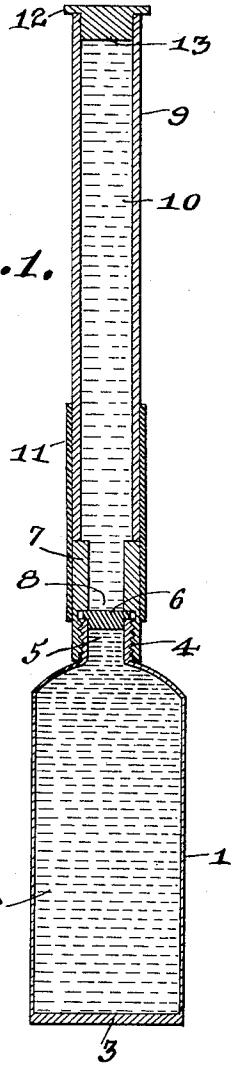


Fig. 3.

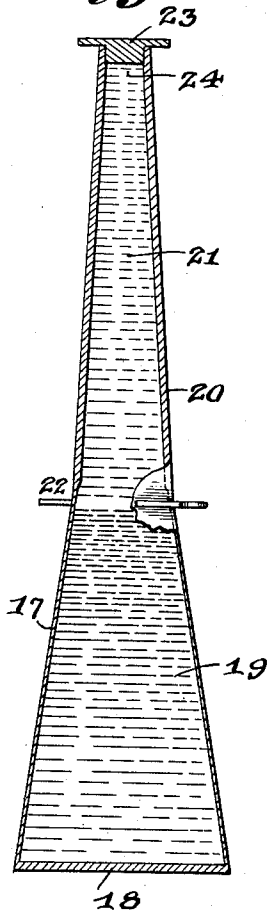


Fig. 2.

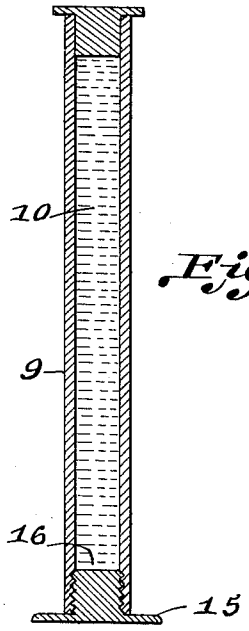
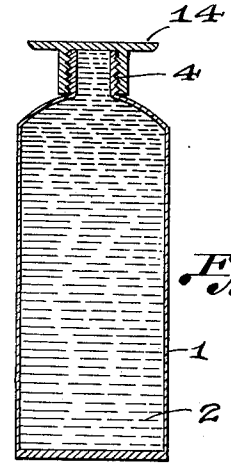


Fig. 2a.



Inventor

C. B. Strauch

By Seymour & Bright

Attorneys

Patented May 29, 1934

1,960,858

UNITED STATES PATENT OFFICE

1,960,858

COMBINATION OF TWO INCOMPATIBLES

Clauss Burkart Strauch, Milwaukee, Wis.

Application July 15, 1931, Serial No. 550,907

4 Claims. (Cl. 128—272)

This invention pertains to a device for the storage and application of two incompatible chemicals, either pure or in mixture, for medical purposes.

In medicine, two incompatible chemicals are frequently combined at the place of application where a product of their chemical reaction produces a useful effect.

For example:

One of the two incompatibles may be an aqueous paste mixture of barium peroxide and precipitated chalk, and the other incompatible may be an aqueous solution of a fruit acid. When the two incompatibles are combined at the locus of application as, for instance, in a wound, nascent hydrogen peroxide will develop, which will have a useful and antiseptic action.

Or,

One incompatible may be represented by a mixture of sodium bicarbonate, suitable antiseptics and easily foaming inert substances, while the other incompatible may be composed of a similar mixture containing, however, tartaric acid instead of sodium bicarbonate. The two mixtures are kept separated before use. When admixed at the locus of application as, for instance, in the vagina, carbon dioxide will immediately be liberated and will transform the mixture into a greatly expanding foam, which will carry the antiseptic into every fold of the vaginal cavity.

The latter example is of very great practical importance. The use of foam-producing antiseptic incompatibles of the character described and in the manner outlined assures the application of the vaginal antiseptic medicaments in a manner which is vastly superior to antiseptic procedures as heretofore practiced by the medical profession or in the home. The importance of vaginal antisepsis is emphasized by the fact that 65,000 mothers die annually in the United States from infections after childbirth. Any method of improving present modes of sterilization of the vaginal tract will tend to reduce this terrific death rate.

The invention herein disclosed is primarily adapted to this foam treatment without, however, being restricted thereto. The present invention will provide a woman with a simple appliance for feminine hygiene without the disadvantages of the douche.

On the accompanying sheet or drawing,

Fig. 1 is a sectional view through one embodiment of the invention.

Fig. 2 is a sectional view through one element of a second embodiment of the present invention.

Fig. 2*a* is a sectional view through the second element of the second embodiment.

Fig. 3 is a view, partly in section and partly in elevation, of a third form of the invention.

Reference numeral 1 designates a collapsible container of any suitable shape and material as, for instance, a collapsible tin tube or a collapsible rubber ball, which is filled, as indicated at 2, with one of the two incompatible substances. One end of container 1 is closed, as indicated at 3. The other end has a neck 4, provided with means for attaching another tube or a bored cap leading to another tube. As shown in Fig. 1, this means consists of screw threads. Bore 5 of neck 4 is closed by plate 6, which is securely retained by threaded cap 7, provided with a central bore 8. Screw cap 7 is connected to a second tube 9 which encloses the other incompatible 10. The connection between cap 7 and tube 9 may be accomplished by means of a rubber hose 11; to facilitate this connection, cap 7 may be of an elongated tubular shape, as shown in Fig. 1. Alternatively, the cap may be a part of tube 9, or may be firmly connected therewith. The other end 13 of tube 9 is closed by stopper 12 or other suitable closure.

Tube 9 may be of any suitable material. It may be collapsible, but is preferably made of a stiff non-collapsible material, as glass or hard rubber.

The two incompatible media, 2 and 10, are thus positively maintained out of contact with each other, since plate 6, retained in place by bored cap 7, completely separates them. In use, the patient will simply unscrew cap 7, together with attached tube 9, remove plate 6, and will then screw cap 7 and attached tube 9 back onto neck 4. Media 2 and 10 are thus placed into communication with each other through bores 5 and 8. After removal of closure 12, pressure exerted on container 1 will force both media 2 and 10 out through end 13, uniting them at the point of application.

A device of this kind is limited to a single application, which is very practical since it leaves no doubt as to the quantity to be used. After use, tubes 1 and 9 may be separated and discarded.

The extent to which the two incompatibles will be found pre-mixed, when expressed at 13, depends largely upon the viscosity thereof. If medium 2 is relatively liquid and medium 10 is relatively viscous, then part of 10 will stick to the wall of the nozzle 9, and come out more or less completely admixed with 2.

Member 6 may be mushroom shaped, or may

be simply a flat disc, or may have any other suitable shape. To facilitate its removal and to indicate its presence, it may be connected with a thread or covered with another plate of thin material, such as cellophane, tin or rubber, which will protrude from underneath cap 7, and will be removed together with plate 6, before use. Or, such a membrane alone, or any other suitable removable closure may be used.

To eliminate the screw threads, the connecting hose 11, or even tube 9, may fit directly on neck 4. In this case, obstruction, during storage, of the passage between media 2 and 10, may be secured by kinking, clamping, twisting or by other means.

In the embodiment illustrated in Figs. 2 and 2*a*, reference numerals which also occur on Fig. 1 designate corresponding elements. The main difference of the second embodiment is that container 9, filled with incompatible 10, is stored separately from container 1, containing the other incompatible 2. Reference numeral 14 designates a cap which closes neck 4, and reference numeral 15 designates another cap which closes opening 16 of tube 9.

This opening may be provided with means, such as the screw threads shown in Fig. 2, for direct attachment to neck 4. This is possible when the tube 9 is made of a material, such as hard rubber or metal. In Fig. 1, the material of 9 was supposed to be glass. Therefore it was necessary to have a separate thread-bearing part, the cap 7. The two constructions are interchangeable, and can be replaced by other connections without departing from the spirit of the invention.

In use, caps 14 and 15 are removed, and opening 16 is connected with neck 4. The device will now be like that of Fig. 1, when ready for use, and will be used as described above.

Tube 9 may be a straight tube or may be curved like a vaginal nozzle to facilitate application. The two embodiments described are intended merely to illustrate the underlying principle of the present invention, without limiting the latter to the particular shapes and connections shown.

The aforedescribed principle may be used for three or more incompatibles by simply providing end 13 of container 9 with means for connecting it to another tube similar to 9, which could be filled with the third incompatible, all three incompatibles being discharged through a common outlet.

Instead of using two individual connected containers, use may be made of one long tube, as shown in Fig. 3. Such tube may be made, for instance, of rubber, tin, or paraffin paper, rolled into the shape of a pipe or cone and reinforced adjacent one end by an excess of paraffin wax. Reference numeral 17 represents the collapsible part of the container, being provided with a closed end 18, and enclosing one incompatible 19. The reinforced part of the container is shown at 20, and this part may act as a nozzle. Part 20 encloses the other incompatible 21. The two parts are separated by a clamp or king or other obstruction, indicated at 22. In use, this barrier and the stopper 23 are removed. Pressure exerted on 17 will now force both incompatibles out through 24.

It is evident from the drawing that the capacity of the collapsible part of the combination, as 1 in Fig. 1 and 17 in Fig. 3, has to be larger than that of the non-collapsible or rigid part, as 9 in Fig. 1 and 20 in Fig. 3, which part may serve simultaneously as a container and nozzle. When the volume of the collapsible part is larger than that of the rigid part, the two incompatibles are positively forced to leave the common opening and react together.

It is apparent that the combination described has nothing in common with collapsible tubes having elongated necks, such as those used for nasal applications, or an attachable nozzle, as for vaginal introduction. These nozzle tubes always consist of a single unit, filled wholly or in part with one medium, and unable to store two incompatibles and to unite them for a new and useful reaction.

What I claim is:

1. A combination storage and applicator device for two incompatible medicinal media, said device comprising a two part substantially tubular container, said parts being disposed in longitudinal alignment, one of said parts being collapsible and the other being non-collapsible, and a removable barrier disposed between said parts.

2. A combination storage and applicator device for two incompatible medicinal media, said device consisting of a two part substantially tubular container, said parts being disposed in longitudinal alignment, one of said parts being collapsible and the other being non-collapsible, said non-collapsible part being provided with an opening adapted to serve as a common outlet for the contents of the two parts, and removable means for separating the contents of the parts from each other.

3. A combination storage and applicator device for two incompatible medicinal media, said device consisting of a two part substantially tubular container, said parts being disposed in longitudinal alignment, one of said parts being of substantially greater capacity than the other, said other part being elongated whereby it is adapted to serve as an applicator nozzle, said first-named part being collapsible in character, and removable means for separating the contents of the parts from each other.

4. A combined storage and applicator tube consisting of a collapsible part adapted to enclose one medicinal medium, a second elongated part extending from and constituting an extension of said first named part, said second part being of relatively reduced capacity and having a reinforced wall structure whereby it is adapted to serve as an applicator nozzle, said second part being adapted to enclose a medicinal medium which is incompatible with the medium of said first-named part, and removable means for constricting said tube at the juncture of said parts, whereby the contents of said parts are maintained out of contact with each other.

CLAUSS B. STRAUCH.