

Feb. 9, 1926.

1,572,324

A. E. SMITH

MEDICINAL AND ANÆSTHETIC PACKAGE

Filed Dec. 16, 1922

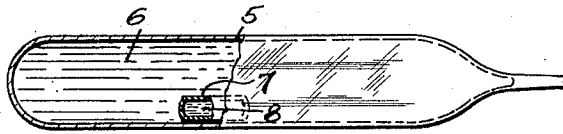


Fig. 1.

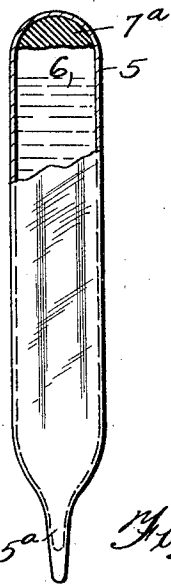


Fig. 2.

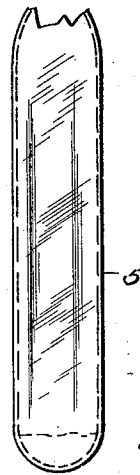


Fig. 3.

Inventor
Arthur E. Smith

By *Shepherd & Campbell*

Attorneys

UNITED STATES PATENT OFFICE.

ARTHUR E. SMITH, OF PITTSBURG, KANSAS, ASSIGNOR TO CLAUDE A. SMITH, OF PITTSBURG, KANSAS.

MEDICINAL AND ANÆSTHETIC PACKAGE.

Application filed December 16, 1922. Serial No. 607,393.

To all whom it may concern:

Be it known that I, ARTHUR E. SMITH, a citizen of the United States, residing at Pittsburg, in the county of Crawford and State of Kansas, have invented certain new and useful Improvements in Medicinal and Anæsthetic Packages, of which the following is a specification.

In my copending application Serial Number 607,391 filed on the 16th day of December, 1922, I have claimed broadly a medicinal package comprising a container containing a plurality of ingredients, one at least of which is a liquid and one, or more, of which are separated from the other or others by a fusible wall. Additionally, that application claims specifically the use of a capsule as the fusible element.

In my application Serial Number 607,392 filed on the 16th day of December, 1922, which is subsidiary to the first named application, I have claimed specifically the thought of making the container or ampule in the form of a two-part container with merely a fusible plug between them.

The present application is likewise subsidiary to the first named application and is intended to claim specifically the separation of two liquids by a fusible wall, non-miscible with both of said liquids.

In the accompanying drawing:

Fig. 1 is a view partly in side elevation and partly in section, of an ampule constructed in accordance with the invention;

Fig. 2 is a view like Fig. 1, but showing the condition of the ampule after it has been placed in a sterilizer and boiled and the fusible capsule has been melted to permit the two liquids to mix; and

Fig. 3 is a side view of the ampule showing the neck broken, to permit of the insertion of the needle of a hypodermic syringe.

Like numerals designate corresponding parts throughout the several figures of the drawing.

In the drawing, 5 designates an ampule of glass, which may be of any desired color. The main body of this ampule is intended to

receive a liquid 6, which may be sterile, distilled water, alcohol, glycerine or any other suitable liquid or mixture of liquids or liquid solution, as the case may be.

A chemically pure paraffin capsule 7 receives another liquid ingredient 8 and it is the function of the capsule 7 to separate the liquids 6 and 8 until the time of use arrives. When the time of use arrives, the ampule is placed in a sterilizer and boiled and the resultant rise of temperature melts the paraffin of which the capsule 7 is composed and the two liquids are permitted to mix. After the capsule 7 has been melted, the ampule is placed in a glass of cold water, upside down, as illustrated in Fig. 2, and the resultant lowering of the temperature of the ampule and its contents, results in the solidification of the paraffin, which collects in the form of a lump 7^a in the upper end of the ampule.

The ampule is then turned to the position illustrated in Fig. 3 and the elongated neck portion 5^a is broken off, rendering it possible to insert the needle of a hypodermic syringe directly into the intermixed liquids.

There is thus presented for the use of the physician a freshly mixed preparation which has never been removed from its original container and consequent any possibility of contamination is absolutely avoided.

The importance of using freshly mixed solutions when injecting them into the human system cannot be over-estimated. The use of solutions that are not absolutely fresh or which have been exposed to the atmosphere for any considerable length of time after mixing and before use, is positively dangerous. See in this connection, Prinz's textbook entitled "Dental Materia Medica and Therapeutics", third edition, page 463:—

"The practitioner is especially cautioned in regard to the use of local anæsthetics in the form of ready made solutions. Solutions of cocaine, even when rendered sterile by fractional sterilization, will not remain so after the contents of the bottle are ex-

posed to the air for a short time. Ready made solutions that are sold in the shops under more or less fanciful names require still greater precautions. The recently enacted pure food and drug act requires that all solutions containing cocaine, eucaine, and other similar alkaloids, must be labeled. Most of the many so called safe and reliable anæsthetics found in the market contain cocaine or its substitute in various quantities. The addition of adrenalin to a ready made solution not only destroys this alkaloid in a very short time, but the product of its decomposition with the decomposed cocaine makes the solution still more dangerous. The printed formulas that accompany many of the ready made solutions of local anæsthetics frequently show an utter disregard of the pharmacologic action of the individual ingredients which forces us to conclude that they are a slur on the intelligence of the practitioner who uses such compounds."

Quoting Fisher from his textbook entitled "Local Anesthesia in Dentistry", page 48, 1914 edition.

"Synthetic suprarenin is stable only to a limited degree after the bottle has once been opened; for this reason the transferring into another vessel of the quantity required in every case, as recommended by Seidel, seems impracticable. In private practice it is best to make a fresh solution from tablets, as cases present themselves. 'The very convenient tablets' as Braun writes, 'are preferable to any other form of dispensing alkaloids used for medical purposes. This is especially true of unstable drugs like suprarenin which, in a dry tablet form, keeps for a long time.'"

Same author from page 53:

"Numerous solutions in the market not only contain admixtures of highly toxic drugs but also lack sufficient neutrality; in other words, they are not isotonic but heterotonic. Novocain-suprarenin solutions which are intended for injection must always be of the purest quality; they must be crystal clear and not contain any admixtures nor must they have come in contact with any impurities during the process or preparation."

Same author from page 55:

"For the requirements of daily practice it seemed expedient to dispense novocain-suprarenin in ampules so as to offer the solution ready for use in convenient form. Our experiences with these ampules, however, induce us to give the preference to solutions freshly made from tablets, for the present at least. The ampule solution decomposes more quickly and its stability depends upon the conditions of temperature and light under which it is preserved. Suprarenal extract is not stable for any

length of time when in liquid union with novocain."

Same author page 41:

"The preparations marketed in ampules are somewhat untrustworthy, according to recent opinions, because their stability is a limited one. For this reason freshly made solutions are absolutely preferable to all stock solutions."

In the preceding discussions the authors were considering, primarily, anæsthetic solutions and in the field of anæsthetic solutions used in nerve blocking work the present invention has a wide range of usefulness. However, its use is not limited to that field but it is of utility in any field where it is important to have a freshly made solution at the time of use.

Merely as illustrative of some of the uses of the invention and not as restricting the invention to the particular uses named, I may say that the liquid 6 may consist of sterile, distilled water and the contents of the capsule may consist of salvarsan or neosalvarsan.

Many uses of the invention will readily suggest themselves to the manufacturing chemist and pharmacist and it is sufficient to say that the invention is of value in any relation where it is desired to maintain two liquids separate until the time of use and then intermix them, in vacuo, without having the separating medium incorporated in the resulting solution.

However the invention is limited only by the state of the art and so far as I am aware I am the first to place two liquids in a container and separate them by a wall fusible at a temperature above normal but lower than the fusion point of the container so that if the container be subjected to heat the wall will melt and permit the liquids to intermix and this I desire to broadly protect.

Having described my invention what I claim is:

1. A medicinal package comprising a container for two bodies of liquid and a fusible wall separating the two bodies of liquid which fusible wall is non-miscible with both of said bodies of liquid said wall being meltable at a temperature above normal but materially below the melting point of the material of the container.

2. A medicinal package comprising a container containing a body of liquid and a fusible casing containing a second body of liquid, said fusible casing being non-miscible with both of said bodies of liquid and being meltable at temperatures materially above normal but materially below the melting point of the material of the container.

3. A medicinal package comprising a sealed glass ampule containing a body of liquid, a capsule in the said body of liquid which capsule contains a second body of

liquid, said capsule being made of a material non-miscible in both of said bodies of liquid and fusible at temperatures materially above normal but materially below the melting point of the material of the ampule. 5

uum and containing a body of liquid and a capsule in said ampule and in said body of liquid, made of paraffin, said capsule containing a second body of liquid, said paraffin being non-miscible in both of the bodies of liquid. 10

4. In combination a medicinal package comprising a glass ampule sealed under vac-

In testimony whereof I affix my signature.

ARTHUR E. SMITH.