Oct. 19, 1926. 1,603,877

A. E. SMITH

MEDICINAL PACKAGE

Filed May 18, 1925

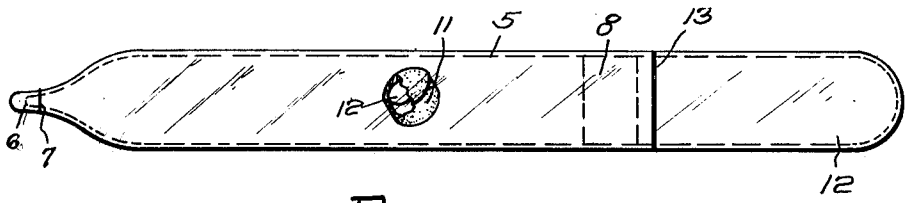


FIG. 1.

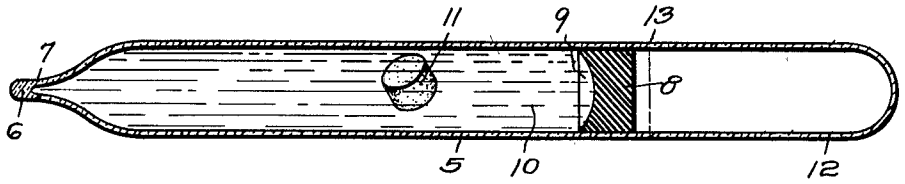


FIG. 2.

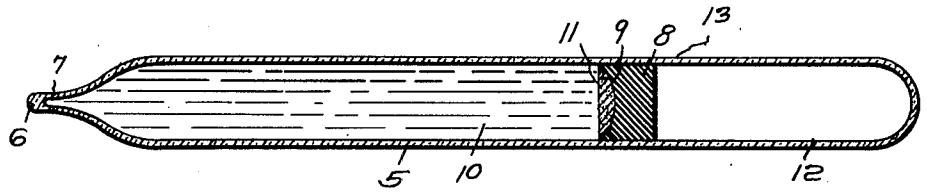


FIG. 3.

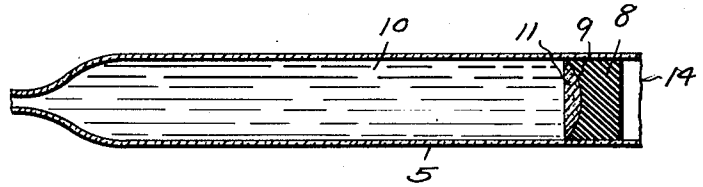


FIG. 4.

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UNITED STATES PATENT OFFICE.

ARTHUR ERVIN SMITH, OF LOS ANGELES, CALIFORNIA.

MEDICINAL PACKAGE.

Application filed May 18, 1925. Serial No. 31,031.

This invention relates to a medicinal package or ampule and it has for its object to provide a device of this character of such a nature that the medicinal solution may be made fresh at time of use and injected from the ampule, through the medium of a suitable hypodermic syringe, directly into the patient.

In my co-pending application Serial Number 607,391, filed December 16, 1922, I have disclosed a medicinal package consisting of an ampule containing a body of distilled water and having therein a capsule of paraffin or tablets, of any suitable pharmaceutical preparation, such as an anesthetic for example, the whole being so arranged that the tablets are maintained out of contact with the vehicle or water until the time of use arrives, at which time the ampule is immersed in hot water to cause the paraffin to melt and to permit the tablet to dissolve in the distilled water or any other desirable vehicle.

The importance of having freshly made anesthetic solutions for use in nerve blocking work, has been set forth at length in the specification of my application Serial Number 607,391 and need not be repeated here. It suffices to say that in certain classes of work and with certain materials, it is absolutely essential that the solution be freshly made at the time of use in order to avoid disintegration or chemical change of unstable drugs and to avoid deleterious or toxic effects upon the patient.

The ampule constituting the subject matter of the present invention differs from the ampule of my application aforesaid in that it is adapted to be loaded into a syringe after the manner of a cartridge and has a breakable tip at one end of the ampule and a movable cork or stopper toward the other end of the ampule, the latter being adapted to be engaged by the plunger of the hypodermic syringe to eject the liquid through the broken tip of the ampule and into and through a hypodermic needle.

In my co-pending applications Serial Numbers 31,029 and 31,030, filed on the 18th day of May, 1925, I have illustrated syringes adapted for use in connection with the ampule of the present invention. However, it is to be understood that this application is intended to cover medicinal packages per se since it is manifest from the two applications referred to that it is not limited to use with any one type of syringe.

In the accompanying drawing:

Figure 1 is a side elevation of an ampule constructed in accordance with the invention.

Figure 2 is a longitudinal sectional view therethrough, before being heated in boiling water.

Figure 3 is a longitudinal sectional view therethrough, after being heated, and

Figure 4 is a sectional view after the tip and rear end portions are broken off and the ampule is ready to be charged into a syringe.

In the drawing, wherein like reference characters designate corresponding parts throughout the several figures, 5 designates the body of an ampule, having a reduced end or tip 6. This tip is etched, or cut partially through, as indicated at 7, to render it easy to break away the tip 6 and thus leave an opening through which the contents of the ampule may be ejected.

While I have mentioned distilled water as constituting one of the ingredients of the medicinal solution, any other liquid may be substituted therefor, if, in the judgment of the physician, this should be done. A stopper 8 which is preferably of rubber and which is preferably provided with a concave front face 9 is disposed to slide in the body of the ampule and confines a body of liquid, such as distilled water for example, indicated at 10, between itself and the tip 7 and in this body of liquid there is placed a paraffin capsule 11 containing tablets or powder 12 of any character that it is desired to dissolve in the liquid. The rear end of the ampule is preferably closed and hermetically sealed as indicated at 13 and the ampule is nicked, etched, cut or otherwise weakened at 13^a to permit of this rear portion being broken away when the time of use arises.

Thus, when placed upon the market the ampule constitutes a hermetically sealed package which protects not only the medicinal ingredients but also its stopper 8 from contamination. When the end 13 is broken away at the time of use, the edge 14 constitutes a surface against which a retaining element of the syringe, not shown, may bear, as illustrated in my co-pending applications above referred to. When the par-

affin of the capsule is melted, it rises, due to the specific gravity, (if the ampule be held in a vertical position at this time), to the stopper 8 and seats itself in the concave face of the stopper. Then the package is placed in cold water, holding large end up, or is held in water until the paraffin congeals or hardens and thus, becomes, in effect, a part of the stopper. This stopper in conjunction with the plunger of the syringe constitutes an ejecting piston for the medicinal solution.

While I prefer to make the ampule as a completely sealed package, as illustrated in Figure 2 of the drawing, the closed rear end may be omitted if desired and the inner end be left open to produce a package substantially like that illustrated in Figure 4.

The reduced and tapered end of the ampule by which the broken tip 6 is carried, constitutes a wedging element which materially aids in forming a fluid tight connection between the forward end of the ampule and suitable packing members of the syringe, at the time of ejection of the liquid from the ampule.

It is to be understood that the invention is not limited to the precise construction set forth but that it includes within its purview whatever changes fairly come within either the terms or the spirit of the appended claims.

Having described my invention, what I claim is:

1. An ampule of the character described comprising a body portion having a breakable tip and a slidable stopper disposed therein, a body of liquid between the stopper and tip and a readily fusible medicine carrying container in said liquid.

2. An ampule of the character described comprising an elongated body portion having a tapered front end having a breakable tip, a slidable stopper disposed therein, a body of liquid between the stopper and the tip and a readily fusible medicine carrying container in said liquid.

3. A structure as recited in claim 2 wherein said stopper has a concave front face.

4. An ampule of the character described comprising an elongated body portion spanned by a sliding stopper and hermetically sealed both in front and in rear of said stopper, a body of liquid in front of said stopper, an element to be mixed with said body of liquid and a fusible body separating said element from said body of liquid until fused by the application of heat.

5. A structure as recited in claim 4 in combination with weakened portions formed in the body of the ampule in the rear of the stopper and adjacent the front end thereof.

6. An ampule of the character described comprising an elongated body portion having a stopper slidably disposed therein, said stopper being of elastic material and having a concave front face, and a readily fusible medicine carrying container in advance of said stopper, the material of which, when fused, seats itself in the concave front face of the stopper and forms a part of said stopper.

7. An ampule of the character described comprising a body portion, a slidable stoppper disposed therein, a body of liquid within the body portion and in advance of the stopper and a readily fusible medicine carrying container in said liquid.

In testimony whereof I hereunto affix my signature.

ARTHUR ERVIN SMITH.