

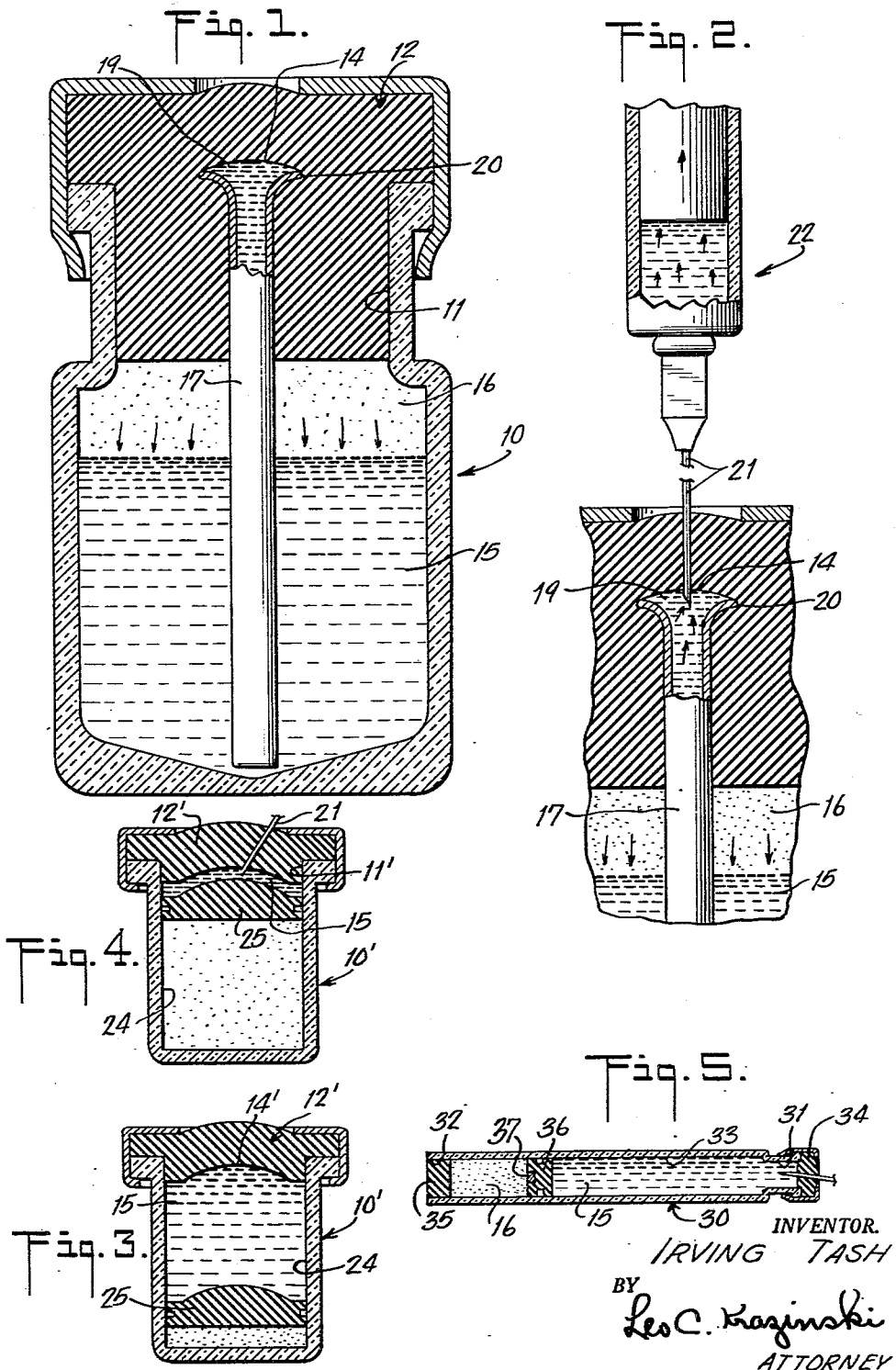
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SEALED PACKAGE

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SEALED PACKAGE

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The present invention relates to special packages and, more particularly, to sealed packages containing a liquid adapted to be forced into the needle of a hypodermic syringe.

Heretofore, it has been customary to provide sealed packages containing a liquid adapted to be dispersed by means of a hypodermic syringe which had a closure adapted to be pierced by the needle of the syringe whereby to withdraw a quantity of the liquid by manipulating the plunger of the syringe while holding the container in an inverted position.

A disadvantage of such method of charging the syringe is that, when the plunger is withdrawn to draw the liquid into the syringe, a partial vacuum is created within the container, which, after removal of the needle from the closure, caused air carrying bacteria to be drawn into the container and contaminate the contents thereof. Another disadvantage is that air is drawn into the syringe which must be expelled from the syringe before using the same. A further disadvantage is that it is difficult to withdraw any accurately measured quantity of liquid desired for a particular treatment, whereby the syringe usually is charged with a greater quantity than required of which the desired quantity is used and the excess is wasted.

Accordingly, an object of the present invention is to provide a sealed package for liquid adapted to be dispensed by hypodermic syringes which package is not subject to the foregoing difficulties and disadvantages.

Another object is to provide such a package from which the liquid is forced into the hypodermic needle.

Another object is to provide such a package which need not be inverted to withdraw the liquid therefrom.

Another object is to provide such a package for charging a hypodermic syringe in a rapid and efficient manner.

A further object is to provide such a package which is simple and economical in construction and is practical and reliable in the use thereof.

Other and further objects will be obvious upon an understanding of the illustrative embodiment about to be described, or will be indicated in the appended claims, and various advantages not referred to herein will occur to one skilled in the art upon employment of the invention in practice.

In the drawing:

Fig. 1 is a longitudinal sectional view of a sealed package in accordance with the present invention.

Fig. 2 is a fragmentary sectional view of the package and a hypodermic syringe, illustrating the manner in which the syringe is charged.

Fig. 3 is a longitudinal sectional view of another package in accordance with the present invention.

Fig. 4 is a view similar to Fig. 3, illustrating the operation of the package.

Fig. 5 is a longitudinal sectional view of still another package in accordance with the present invention.

Referring to the drawing in detail and, more particularly to Fig. 1 thereof, a sealed package is shown which

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generally comprises a container 10 having an opening 11 at one end thereof, a closure 12 for sealing the opening, constructed of a material, such as rubber or the like, adapted to be pierced by a hypodermic needle and adapted to self-seal the passageway formed by the needle after the needle is withdrawn and having a portion 14 in communication with the interior of the container through which the needle is adapted to pass, a liquid 15 in the container, a compressed gas 16 in the container, and means for maintaining liquid under pressure adjacent the closure portion 14.

In this embodiment of the invention, the aforementioned means is a syphon tube 17 having one end adjacent the closure portion 14 and having its other end adjacent the end of the container opposite the opening 11. Preferably, the closure 12 has a bore extending partially therethrough and facing the interior of the container for mounting the syphon tube 17 therein. As shown, the closure portion has a concave or recessed surface facing the syphon tube which serves as a liquid chamber 19 and the end 20 of the syphon tube facing this chamber is flared for the purpose about to be described.

As shown in Fig. 2, when a needle 21 of a hypodermic syringe is inserted into the closure and is caused to pass through the portion 14, the flared end 20 of the syphon tube serves to guide the point of the needle toward the bore of the tube. Since the compressed gas acts on the liquid to force the liquid upwardly within the syphon tube, this liquid under pressure is forced into the needle when its point is within the chamber 19 or the bore of the tube, whereby the syringe is charged with liquid from the package.

The package may be prepared by sterilizing the container, securing the closure, and introducing the liquid through the closure and the syphon tube by means of a needle, whereby the liquid in filling the container compresses the sterile air therein to provide a head of compressed air above the liquid, which is adapted to expel the liquid in the manner just described. Alternatively, this pressure head may be supplemented with a charge of any dry sterile and inert gas which is introduced by way of a needle either before or after the liquid is introduced into the container.

In Figs. 3 and 4, another embodiment of the invention is shown wherein the package comprises a container 10' having a tubular body section 24 open at the end 11' and closed at the opposite end, a closure 12' for the open end having a portion 14' herein shown as recessed, through which the needle 21 is adapted to pass (Fig. 4), a piston 25 slidably disposed in the tubular section, a liquid between the piston and the closure 12'; and a compressed gas between the piston and the closed end or bottom of the container.

In this embodiment the piston constitutes the means for maintaining the liquid under pressure adjacent the closure portion 14' whereby, when the needle is inserted into the liquid the gas acting on the piston causes the latter to force liquid into the needle. Preferably, as shown herein, the piston has a dome-shaped portion on the side facing the closure which is constructed to enter the recess of the closure portion 14' and mate therewith, whereby all of the liquid in the container is adapted to be dispensed therefrom. An advantage of the piston arrangement is that the gas and liquid are separated by the piston to prevent the gas from being absorbed or dissolved in the liquid.

The package shown in Figs. 3 and 4 may be prepared in the same manner as the package previously described. However, in order to supplement the compressed air, the piston is formed of a material adapted to be pierced by a needle and self-seal itself to permit the pressurizing gas to be introduced into the air space by inserting a needle

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through the closure 14' and the piston 25 connected to a supply of compressed gas.

In Fig. 5, a package is shown which comprises a container 30 having an opening 31 at one end, an opening 32 at the other end, and a tubular section 33 between the ends; a closure 34 through which the contents are dispensed in the manner hereinbefore described; a closure 35, the purpose of which is about to be made apparent; a piston 36 slidably disposed in the tubular section; a liquid 15 in the container between the piston and the closure 34; and compressed gas 16 between the piston and the closure 35 for urging the piston toward the closure 34 to cause the liquid to be forced into the needle when inserted through the closure 34.

The closure 35 is constructed of material adapted to be pierced by a needle and self seal itself when the needle is withdrawn, whereby the package may be prepared in the manner about to be described. This may be accomplished by placing the piston in a sterile container adjacent the end 32 introducing liquid through the end 31, applying the closures 34 and 35, and injecting compressed gas by means of a needle through the closure 35.

In order to prevent the needle used for injecting the compressed gas 16 into the container from piercing the piston, the piston is provided with a central section 37 facing the closure 35 which is formed of hard material, such as metal, glass or plastic.

From the foregoing description, it will be seen that the present invention provides sealed packages for dispensing medicaments therefrom by means of hypodermic needles without manipulating the plunger of the syringe, simply by inserting the needle and utilizing the educting means to force liquid into the needle. The amount of liquid to be dispensed can be accurately controlled by withdrawing the needle when the entry of liquid therein is desired to be stopped. These advantages are attained in a simple and practical manner.

As various changes may be made in the form, construction, and arrangement of the parts herein, without departing from the spirit and scope of the invention and

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without sacrificing any of its advantages, it is to be understood that all matters are to be interpreted as illustrative and not in any limiting sense.

What is claimed is:

5 1. A sealed package of the class described comprising a container having an opening, a closure sealing said opening constructed of a material adapted to be pierced by a hypodermic needle and adapted to self-seal the passageway formed by the needle after the needle is withdrawn, said closure having a recess in communication with the interior of said container into which the needle is adapted to enter, a liquid in said container, a compressed gas in said container, and a syphon tube extending from said recess into said container for maintaining liquid under pressure within said recess, whereby said liquid is adapted to be forced into the needle.

15 2. A sealed package of the class described comprising a container having an opening at one end thereof, a closure sealing said opening constructed of a material adapted to be pierced by a hypodermic needle and adapted to self-seal the passageway formed by the needle after the needle is withdrawn, said closure having a bore extending partially therethrough provided with an open end facing the interior of said container and a closed end through which the needle is adapted to extend, a liquid in said container, a compressed gas in said container, and a syphon tube having one end mounted in said bore and having its other end adjacent the end of said container opposite said opening, whereby said liquid is adapted to be forced into the needle.

References Cited in the file of this patent

UNITED STATES PATENTS

35 2,168,437 Buercklin _____ Aug. 8, 1939
2,202,163 Mulford _____ May 18, 1940
2,683,484 Fallicant _____ July 13, 1954

FOREIGN PATENTS

40 308,597 Great Britain _____ June 19, 1930