

[54] **INSERTABLE DEVICE PACKAGE**

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[51] Int. Cl. **A61f 15/00**

[58] Field of Search..... 128/263, 264, 262, 128/271

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[57] **ABSTRACT**

An insertable device package formed by an elongated, enclosed sheath which is sealed at opposite, leading and trailing ends and contains the insertable device. The trailing end of the sheath, near the base of the device, forms a pocket which is depressible by an external member that controllably forces the device through the seal at the leading end of the sheath and becomes enveloped by it. The device is thereafter inserted, for example, into an opening of a body.

10 Claims, 7 Drawing Figures

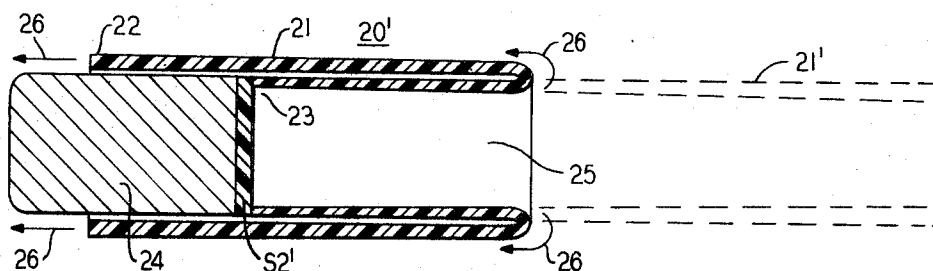


FIG. 1A

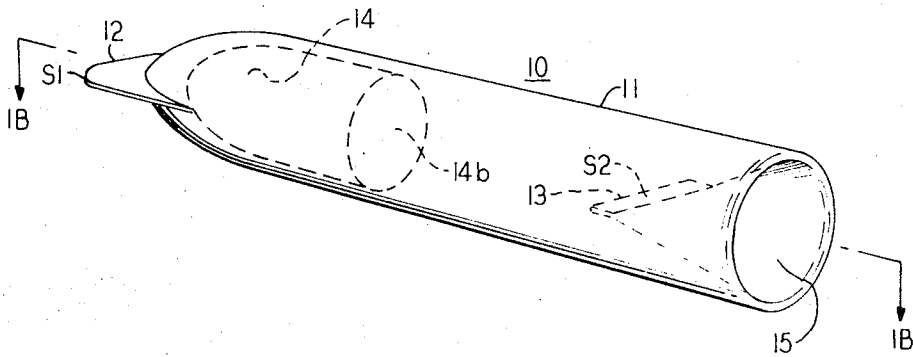


FIG. 1B

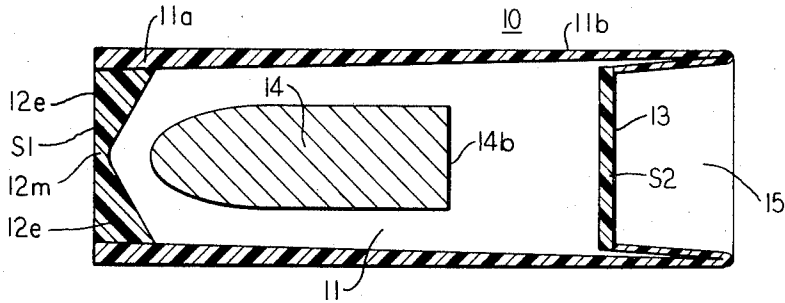
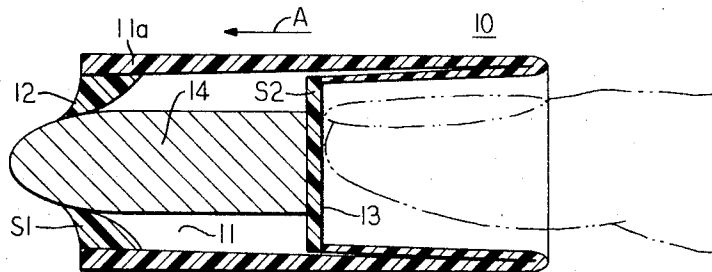


FIG. 1C



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FIG. 2A

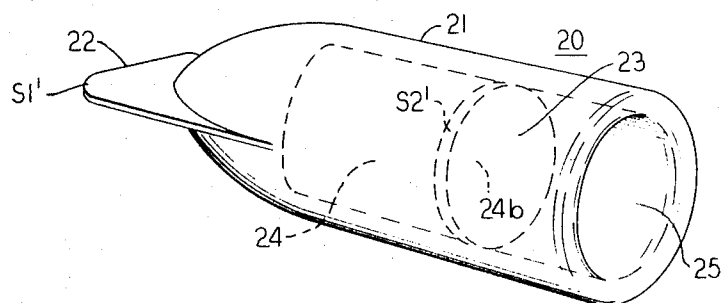


FIG. 2B

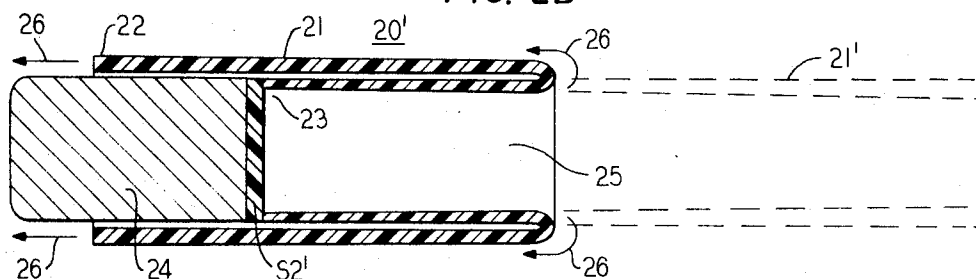


FIG. 2C

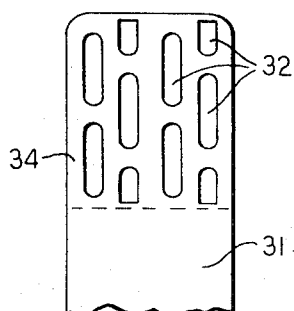
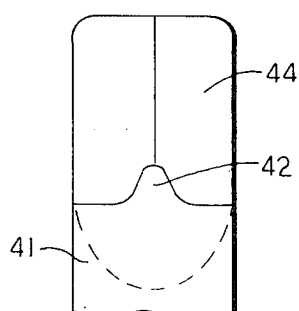


FIG. 2D



INSERTABLE DEVICE PACKAGE

BACKGROUND OF THE INVENTION

This invention relates to insertable device packages, particularly for suppositories, tampons and the like.

Devices which are intended for insertion into opening of a body must meet dual packaging requirements: the package must reduce, and desirably eliminate, the possibility of device contamination before use, and it must also permit the application of the device in a sanitary way that does not result in soiling the fingers of the user. Various techniques have been tried, ranging from the use of plungers with the packaging to the use of protective shields of generally complex configuration.

Accordingly, it is an object of the invention to expedite the sanitary packaging of devices. Another object is to achieve a completely sealed package and sanitary applicator using a single packaging element. A related object is to achieve the compact sanitary packaging of suppositories and tampons without the need for plungers or complex protective shields.

SUMMARY OF THE INVENTION

In accomplishing the foregoing and related objects, the invention provides a package in the form of an enclosed, typically tubular, sheath which is sealed at both ends and contains the device that is to be inserted into an opening of the body. One of the sealed ends forms a pocket for accommodating an external member, such as the finger of a user, that forces the device out of the sheath through the oppositely sealed end.

In accordance with one aspect of the invention, the device within the package is a suppository of standard composition. Alternatively the device may be a tampon for the absorption of body fluids or a medicator unit. Where the device is a tampon, one end is affixed to, and forms a seal at, the pocket end of the sheath. When an external member, such as a finger, is applied to the pocket, the tampon is forced out of the sheath. The sheath thus becomes turned "outside-in", producing a sanitary shield for the applicator member which moves the tampon into position, and permitting the tampon to be easily retrieved when it has served its purpose. Such a package is formed by attaching one end of a cylindrical sheath by a shrink fit, for example, and then pulling the sheath "inside-out" and sealing its free end.

In accordance with another aspect of the invention, the leading edge of the package has a controlled seal in which the resistance to piercing is increased as the device is being pushed through the seal. Such a seal can be thicker at its edges than at its center.

In accordance with still another aspect of the invention the wall of the sheath is tapered from the leading end to the trailing end, with the wall thickness being greater at the leading end in order to promote the envelopment of the external member, e.g., the finger, at the trailing end where the pocket is formed.

In accordance with other aspects of the invention, the tampon is affixed to the sheath in various ways, including placement in an apertured portion of the sheath to facilitate the desired absorption of body fluids, and the retention of the tampon by being looped about the band at one end of the sheath.

BRIEF DESCRIPTION OF THE DRAWINGS

Other aspects of the invention will become apparent after considering several illustrative embodiments taken in conjunction with the drawings in which:

FIG. 1A is a perspective view of a suppository package in accordance with the invention;

FIG. 1B is a cross-sectional view of the suppository package of FIG. 1A;

FIG. 1C is a cross-sectional view showing the suppository of FIG. 1A being ejected from its package;

FIG. 2A is a perspective view of a tampon package in accordance with the invention;

FIG. 2B is a cross-sectional view showing the formation and use of a tampon package in accordance with one aspect of the invention; and

FIGS. 2C and 2D are fragmentary views showing alternative attachments of tampons to packaging sheaths.

DESCRIPTION OF THE ILLUSTRATIVE EMBODIMENTS

Turning to the drawings, the embodiment of FIG. 1A is a packaged suppository 10 in accordance with the invention. The package 10 is formed by an enclosed tubular sheath 11 which is sealed at its forward or leading end 12 and at its trailing end 13, and contains a suppository 14. In addition, the trailing end 13 of the package 10 has been inserted into the main body of the sheath 11 to provide a pocket 15 for receiving an external member, such as a finger (not shown) of a user. When the package is to be used, the external member is pushed into the pocket 15 into contact with the base 14b of the suppository 14 to pierce the leading end 12 of the sheath 11. The suppository 14 is of conventional construction. The sheath 11 is desirably of thin-walled plastic material, such as polyethylene or rubber film, which is treated at the ends 12 and 13, by heating, for example, to form seals S1 and S2.

Details of the package 10 of FIG. 1A are set forth in FIG. 1B. The seal S1 at the leading end 12 of the sheath 11 is narrower in the middle 12m than at the edges 12e. In addition, the wall of the sheath 11 is tapered, being of a greater thickness 11a near the leading end than the thickness 11b at the trailing end 13.

The use of the suppository package 10 is illustrated in the cross-sectional view of FIG. 1C. A finger of a user has been inserted into the pocket 15, causing the seal S2 to move forward in the direction indicated by the arrow A into contact with the base of the suppository 14. This also causes an envelopment of the finger by the trailing portion of the sheath 11 and provides a sanitary covering during the further use of the package 10. When the suppository 14 is pushed into engagement of the weakened middle region of the seal S1 (FIG. 1B), further pressure produces a rupturing of the seal. Since the seal S1 is gradually thickened from the center 12m, the resistance of the seal increases as the suppository 14 is pushed further forward (FIG. 1C). Consequently, the tapered seal S1 provides a high degree of control over the subsequent insertion of the suppository 14 into an opening of the body.

A further embodiment of the invention is presented by the tampon package 20 of FIG. 2A. This package includes a sheath 21, similar to that employed for the suppository package 10 of FIG. 1A, and an internally contained tampon 24. As with the suppository package 10, the leading end 22 has a seal S1' for the controlled

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release of the tampon 24. The trailing edge 23 has a seal S2' in the form of a junction between the tampon 25 and the sheath 21. As before, the seal S2' is in a pocket 25 for accomodating an external member that is used to apply thrust to the base 24b of the tampon 24 when the package is ready for use.

One mode of construction of the package 20 of FIG. 2A is illustrated in FIG. 2B. The sheath 21' (shown in outline) is shrunk fit to the tampon 24 at its base end. The sheath 21' is then turned "inside-out" in the direction of the arrows 26, occupying the position of the sheath 21 to that the tampon 24 is positioned within the opposite end 22 of the sheath 21. The package 20 is completed by pulling the sheath 21 forward in the direction of the arrows 26 so that the tampon is completely within the tubular sheath 21. The end 22 is then sealed.

In the use of the tampon package 20 of FIG. 2A, a finger (not shown) is inserted into the pocket 25 and the tampon 24 is pushed forward at its base 24b until the forward seal S1' is pierced. The tampon 24 is then pushed further until the sheath 21 is turned "outside-in", occupying the position of the dashed line sheath 21' of FIG. 2B. In its fully extended position the sheath 21' serves as a complete protective shield for the applicator member. It also serves as a retrieval member when the lift of the tampon is at ane end. This can eliminate the need for such ancillary items as pullstrings and simplifies the packaging of the tampon.

Alternatively, the tampon package 20 of FIG. 2A can be constructed, for example, from sheets of plastic material which are sealed to the tampon at its base, folded over the tampon and sealed along the edges. Other techniques for construction of the package 20 and realization of the pocket 25 will be readily apparent.

Moreover, there are various ways in which the tampon can be attached to its sheath. In FIG. 2C the tampon 34 is within the upper end of a sheath 31, the latter having apertures 32 in the form of elongated slots in order to permit the desired absorption of fluids. The elongated slots are in successive, alternately offset columns, with the individual slots extending approximately between the midpoints of adjoining columnar slots. This configuration of the slots 32 facilitates free expansion of the sheath 31 when the tampon 34 absorbs fluids and results in a diamond-shaped pattern of apertures in the sheath. Another attachment is shown in FIG. 2D where the sheath 41 has a loop 42 near its open end and the tampon 44 is formed by a sheet of material that is folded around the loop 42. Other techniques entail heat sealing of the tampon to the sheath, gluing, mechanical fastening, etc.

While various aspects of the invention have been set forth by the drawings and the specification, the foregoing detailed description is for illustration only and it will be apparent that various changes in parts as well as

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the substitution of equivalent constituents for those shown and described may be made without departing from the spirit and scope of the invention as set forth in the appended claims.

What is claimed is:

1. An insertable device package comprising an elongated enclosed sheath having opposed ends, one of which has a rupturable seal; a device for insertion into an opening of the body positioned within said sheath; the other end of said sheath being sealed by a base member having one side, a portion of said other end of said sheath being inwardly reversed upon itself and terminating in said base member, said one side of said base member and said inwardly reversed portion constituting a preformed pocket for receiving an external member by which pressure can be applied to said base member to force said device from said one end out of said sheath through the first mentioned sealed end.
2. A package as defined in claim 1 wherein said device is a tampon and is affixed to the seal at the pocket end of the said package.
3. A package as defined in claim 1 wherein said sheath has leading and trailing ends and said device is a suppository positioned within said sheath with its base contactable by said pocket at the trailing end.
4. A package as defined in claim 2 wherein said first-mentioned sealed end has a controlled seal.
5. A package as defined in claim 2 wherein the wall of said sheath is tapered and is thicker at the leading end thereof than at the trailing end thereof.
6. A package as defined in claim 2 wherein said sheath is attached to said tampon by a shrink fit.
7. A package as defined in claim 2 wherein said tampon is within said sheath at one end thereof and said sheath is apertured over the course of said tampon.
8. A package as defined in claim 2 wherein said sheath has a strap at one end thereof and said tampon is folded about said strap.
9. A package as defined in claim 4 wherein the controlled seal has a thin middle portion and thicker side portions.
10. The method of inserting a tampon into an opening of the body which comprises the steps of:
 1. Engaging a pocket at one end of a tubular sheath, affixed to an internally contained tampon, by an external member;
 2. Applying pressure to the external member to turn the sheath "outside-in" and cause it to be fully extended with the tampon exposed; and
 3. Inserting the package with the sheath thus extended into an opening of the body with the extended sheath serving as a sanitary shield and a retrieval member.

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