

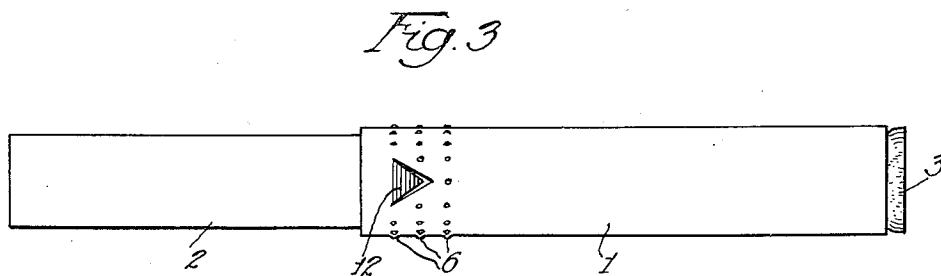
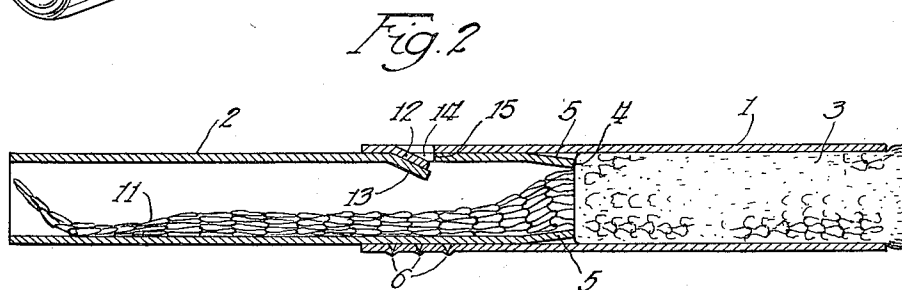
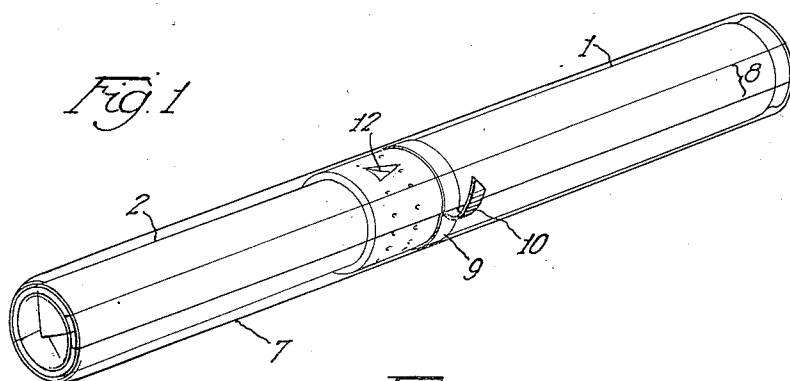
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TAMPON APPLICATOR

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TAMPON APPLICATOR

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This invention relates to improvements in tampon applicators, and more particularly to catamenial tampon applicators of the type embodying outer and inner, or holder and ejector tubes in one of which the tampon is seated and in which the other tube is telescopically movable to eject the tampon.

The main object of the present invention is to provide an arrangement for locking the two tube elements together against separation while, at the same time, preserving free slidability of the ejector tube within the inner tube for tampon ejection purposes.

One of the purposes of providing a locking arrangement such as above mentioned is to avoid accidental separation of the tubes incident to handling of the structure as, for example, when removing an enclosure or wrapper from the structure. It has been found that although frictional contact is provided between the ejector and holder tubes, such frictional contact is not always sufficient to prevent the inner tube from being accidentally displaced from the outer tube incident to handling occasioned by wrapper removal, and otherwise in the normal handling of the applicator preparatory to its normal use.

The present invention is, therefore, aimed at providing a lock as aforesaid which will effectively prevent accidental displacement of the ejector tube from the holder tube, and other objects and advantages of the invention will be understood by reference to the following specification and accompanying drawing in which there is illustrated a tampon applicator embodying a selected form of the invention.

In the drawing:

Fig. 1 is a perspective illustrating the wrapped tampon to which the improved locking arrangement has been applied,

Fig. 2 is a longitudinal cross-section illustrating the details of the applicator structure together with the improved lock, and

Fig. 3 is a side elevation of the applicator structure.

A tampon applicator including a tampon to be applied, comprises an outer or holder tube 1, and an inner or ejector tube 2, both of these tubes being made of a suitable grade of paperboard or other suitable cellulosic material, preferably of one or more paper strips wound spirally with staggered meeting edges so as to form a moderately stiff multi-ply tube. The outer ply of paper is preferably provided with a moisture-proof coating or finish, especially in respect to the outer tube 1.

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The ejector tube 2 is slidable inside of the outer tube, and it should be a fairly free fit so that expansion or contraction of the tubes incident to changes in atmospheric temperature and moisture conditions will not cause binding of the inner tube within the outer tube. They should be such that the inner tube may always be slid into the outer tube for tampon ejection purposes.

A tampon 3 is seated in the front end of the outer tube 1 and the inner end of the ejector tube 2 is arranged to engage the rear end 4 of the tampon so that when the ejector tube is pushed forwardly into the outer tube, the tampon will be forced out of the front end of the outer tube 1.

To insure tampon ejecting engagement of the inner tube with the rear end of the tampon, the front or inner end of the tampon ejector 2 has its end portion somewhat contracted as shown at 5 by more or less corrugating said inner end portion. The rear portion of the outer tube may be provided with a suitable roughened outer surface portion as indicated at 6, the roughness being here represented as being provided by pin pricking the outer tube from the inside to the outside, thereby to facilitate holding of the outer tube in fixed position between the fingers of one hand while the inner tube is forced inwardly with another finger of the same hand to eject the tampon. Outward pin pricking as aforesaid, results in the formation of slight projections on the outside of the tube, and these projections have more or less sharp outer end edges which aid in affording a secure grip on the applicator as aforesaid.

Tampons with applicators of the kind described may be marketed in packages containing any desired number of individually wrapped units such as represented in Fig. 1 wherein the tampon and applicator are enclosed in a wrapping 7 of transparent material such as cellophane or the like. A sheet of the selected material is wrapped around the tampon and overlapping marginal portions extending lengthwise as represented at 8 are preferably adhesively or otherwise united.

The ends of the tampon and applicator are enclosed by folding over end portions of the tubular wrapper thus formed. To facilitate removal of the wrapper, it is preferably provided with a tear strip such as indicated at 9, the latter having an end portion 10 projecting outwardly from between the overlapped and united margins of the wrapper sheet. The tear strip end portion 10 may readily be grasped and the tear strip pulled around the tampon unit, thereby tearing the same into separate end portions which may be removed

endwise from opposite ends of the applicator and tampon.

The handling of the tampon applicator required for removal of the wrapper, and possibly other handling of the applicator in various manufacturing processes, make it desirable to provide a means for effectively preventing accidental withdrawal or displacement of the ejector tube 2 from the rear end of the applicator tube 1. While the ejector tube may be reinserted, the operation of reinserting it is made somewhat difficult because of the need for getting the drawstring element 11 into the ejector tube as shown in Fig. 2.

To prevent accidental displacement of the ejector tube from the outer tube, a locking ear 12 may be punched inwardly from the outer tube while at the same time punching a complementary ear 13 inwardly from the ejector tube. The ear 12 is punched inwardly sufficiently to extend through an opening 14 formed in the inner tube as an incident to the inward punching of the ear 13. When the ears 12 and 13 are formed as shown in Fig. 2, the ear 12 acts to engage the edge portion 15 of the inner tube 2 in the event that the latter is moved rearwardly. Rearward movement of the inner tube 2 is thereby stopped so that the inner tube cannot readily be rearwardly displaced from the outer tube. One such locking ear is adequate, but if desired two or more such ears may be provided. These ears are preferably of triangular shape as best shown in Fig. 3, and they may be punched into the tubular body while externally supporting the telescoped tubes in a suitably grooved supporting member. However, an internal mandrel may be employed within the tubes, if desired, while a punch is forced inwardly to form the inwardly projecting locking ears. As shown, the locking ears are formed in rearwardly spaced relation to the front end of the inner tube, and the tampon is initially seated against said front end. This initial engagement between the ejector tube end and the tampon tends to prevent accidental or unintentional forward movement of the ejector tube which would, if sufficiently extensive, return the locking tongue 12 to its original place in the outer tube and thereby destroy its locking effect.

Various changes in the described construction may, of course, be made while employing the principles of the invention.

I claim:

1. A tampon applicator comprising telescopically interfitting inner and outer tubes, the inner tube being movable forwardly within the outer tube for ejecting a tampon from the forward portion of the outer tube, said inner tube being provided with an opening spaced rearwardly from its front end, and said outer tube being provided with an ear projecting inwardly through said opening into said inner tube so as to be engageable with a portion of the tube edge around said opening to thereby prevent rearward displacement of said inner tube from said outer tube.

2. A tampon applicator comprising telescopically interfitting inner and outer tubes, the inner tube being movable forwardly within the outer tube for ejecting a tampon from the forward portion of the outer tube, and a pair of registering tongues punched inwardly as a unit from said outer and inner tubes respectively, the outer tube tongue extending into the opening formed in said inner tube by displacement therefrom of its tongue and serving to prevent rear-

ward displacement of said inner tube from said outer tube.

3. A tampon applicator comprising telescopically interfitting inner and outer tubes, the inner tube being movable forwardly within the outer tube for ejecting a tampon from the forward portion of the outer tube, and a pair of registering tongues punched inwardly from said outer and inner tubes respectively, the outer tube tongue extending into the opening formed in said inner tube by displacement therefrom of its tongue and serving to prevent rearward displacement of said inner tube from said outer tube, said tongues being of triangular form having pointed front ends and having the sides thereof opposite to said pointed front ends integrally connected to the respective tubes from which they are punched.

4. A tampon applicator comprising outer and inner tubes, the inner of said tubes having a portion of its length telescoped into the rear portion of the outer tube, a tampon housed in the front end portion of said outer tube with the inner or rear end of said tampon seated against the front end of said telescoped portion of said inner tube, said inner tube being provided with an opening spaced rearwardly from its front end, and said outer tube being provided with an ear projecting through said opening into said inner tube so as to be engageable with a portion of the tube edge around said opening to thereby prevent rearward displacement of said inner tube from said outer tube.

5. A tampon applicator comprising outer and inner tubes, the inner of said tubes having a portion of its length telescoped into the rear portion of the outer tube, a tampon housed in the front end portion of said outer tube with the inner or rear end of said tampon seated against the front end of said telescoped portion of said inner tube, and a pair of registering tongues punched inwardly as a unit from said outer and inner tubes respectively in rearwardly spaced relation to said front end of the inner tube, the outer tube tongue extending into the opening formed in said inner tube by displacement therefrom of its tongue and serving to prevent rearward displacement of said inner tube from said outer tube, said outer tube tongue being outwardly displaceable by said inner tube as an incident to tampon ejecting movement thereof relative to said outer tube.

6. A tampon applicator comprising outer and inner tubes, the inner of said tubes having a portion of its length telescoped into the rear portion of the outer tube, a tampon housed in the front end portion of said outer tube with the inner or rear end of said tampon seated against the front end of said telescoped portion of said inner tube, and a pair of registering tongues punched inwardly as a unit from said outer and inner tubes respectively in rearwardly spaced relation to said front end of the inner tube, said tongues extending in the direction of tampon ejecting movement of said inner tube and having rear ends integrally connected to the respective tubes, the outer tube tongue extending into the opening formed in said inner tube by displacement therefrom of its tongue and serving to prevent rearward displacement of said inner tube from said outer tube, and being outwardly displaceable by said inner tube as an incident to tampon ejecting movement thereof relative to said outer tube.

7. A tampon applicator comprising telescopically interfitting inner and outer tubes of flexible material, the inner tube being movable forwardly

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within the outer tube for ejecting a tampon from the forward portion of the outer tube, said tubes being provided with interlocking means for preventing rearward displacement of the inner tube from said outer tube, said interlocking means comprising a lateral projection on one of said tubes and, in the other thereof, a hole which receives said projection, said interlocking means being readily disengageable as an incident to flexibility of the tube material and forces applied to said tubes to effect movement of the inner tube forwardly relative to said outer tube to eject a tampon as aforesaid.

8. A tampon applicator comprising telescopically interfitting inner and outer tubes, the inner tube being movable forwardly within the outer tube for ejecting a tampon from the forward portion of the outer tube, and a pair of registering tongues punched as a unit from said outer and inner tubes respectively so as to extend inwardly of the respective tubes and forwardly in the direction of tampon ejecting movement of said inner tube relative to said outer tube, the outer tube tongue extending into the opening formed in said inner tube by the displacement there-

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from of its tongue and serving to prevent rearward displacement of said inner tube from said outer tube, said tongues having rear ends integrally connected to the respective tubes from which said tongues extend as aforesaid, and said outer tube tongue being displaceable outwardly by said inner tube as an incident to tampon ejecting movement thereof relative to said outer tube.

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