

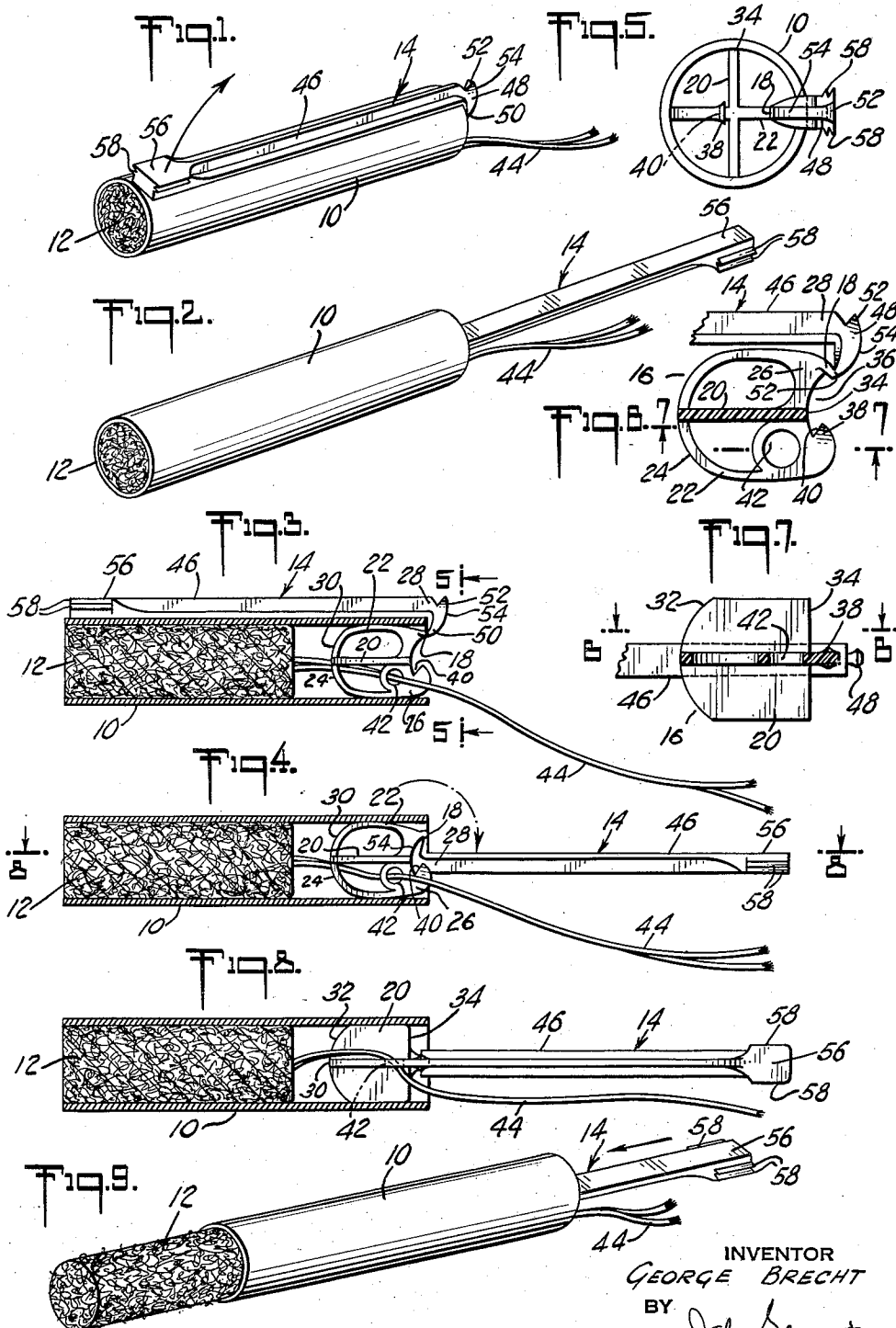
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G. BRECHT

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CATAMENIAL DEVICE

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INVENTOR
GEORGE BRECHT
BY *John Smart*
ATTORNEY

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CATAMENIAL DEVICE

George Brecht, East Brunswick, N.J., assignor, by mesne assignments, to Johnson & Johnson, New Brunswick, N.J., a corporation of New Jersey
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This invention relates to catamenial devices and more particularly to applicators of improved construction and of reduced length for use in connection with tampons.

One form of applicator for tampons which has received wide acceptance includes a pair of telescoped tubes of cardboard or similar material with the inner tube longitudinally movable within the outer tube. The applicator and a tampon of compressed absorbent fibrous material are preassembled as a unit to provide a complete article ready for use. The tampon is positioned within one end portion of the outer tube and the inner tube telescopically positioned in the other end with a major portion of its length extending beyond the end of the outer tube. To eject the tampon, the inner tube, which acts as a plunger, is moved longitudinally in the outer tube in the direction of the tampon.

Such tampon applicators, while acceptable and satisfactory in operation, are considerably longer than the tampons with which they are used. For example, a typical tampon applicator of the above type has an outer and inner tube, each about three inches long, while the tampon is about two inches long. Therefore, the tampon occupies a major portion of the outer tube within which it is positioned, e.g., more than one half the tube's length, and the telescoped inner tube extends for more than one half its length beyond the end of the outer tube, thereby making the over-all length of the assembled tampon and applicator more than one and one half times the length of either tube, and about two and one half times the length of the tampon.

It is customary to package each of such assembled applicators and tampons individually and then package a number of them together, e.g. ten, to provide a sufficient number of tampons for a single menstrual period. Consequently, the package is necessarily quite large in comparison to the size of the tampons which are to be ultimately used. By reducing the over-all length of assembled applicators and tampons, the size of the packages used to contain them may also be reduced and substantial savings in the costs of packaging, packaging materials and of storage can be effected.

It would be also desirable to reduce the over-all length of assembled applicators and tampons because it is customary for such assembled units to be carried on the person, as for example in a purse, during the menstrual period. A package of smaller size would not only be more aesthetic and less noticeable, but would also permit a greater number to be carried.

In accordance with the present invention, there is provided a tampon applicator of reduced size which may be furnished assembled with a tampon to provide an article ready for use. The over-all length of the assembled applicator and tampon is about the length of the outer tube. The applicator is economical to construct and package and is simple and efficient in operation.

A tampon applicator achieving such objects includes an outer tube and a tampon-ejecting plunger comprising a piston positioned within one end of the outer tube and an arm normally positioned on the outside of and in longitudinal alignment with the outer tube and hingedly connected to the piston. The piston and arm are hingedly connected to enable the arm to be rotated on the hinge

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into longitudinal alignment with the outer tube and then moved longitudinally into the outer tube towards a tampon positioned in the opposite end. In such movement of the arm, the piston is moved inwardly toward the tampon and its forward end engages the tampon to eject it from within the outer tube. The invention further includes means on the piston and on the arm for properly positioning the arm and the piston into longitudinal alignment with respect to the outer tube.

Referring to the drawings, wherein a preferred embodiment of the invention is illustrated by way of example:

FIG. 1 is a perspective view of a tampon applicator incorporating the invention, assembled with a tampon to provide a complete article ready for use;

FIG. 2 is a view of the applicator illustrating the arm portion of the tampon-ejecting plunger moved into longitudinal alignment with the outer tube prior to ejecting the tampon;

FIG. 3 is a vertical sectional view of FIG. 1;

FIG. 4 is a vertical sectional view of FIG. 2;

FIG. 5 is a view, on an enlarged scale, of the end of the outer tube containing the piston;

FIG. 6 is a view of FIG. 7 taken along lines 6-6, and illustrates the piston and the hinge connection to the end of the arm portion of the tampon-ejecting plunger;

FIG. 7 is a view of FIG. 6 taken along lines 7-7;

FIG. 8 is a view of FIG. 4 taken along lines 8-8; and

FIG. 9 is a view of the applicator, illustrating the tampon-ejecting plunger moved longitudinally into the outer tube to eject the tampon.

In the drawings, a tampon applicator illustrative of the preferred form of the invention includes an outer tube 10, which may be of the conventional, elongated, cylindrical form, adapted to contain a tampon 12 in one end portion. Associated with the outer tube is a tampon-ejecting plunger which comprises an arm 14 about as long as the outer tube and a piston 16 hingedly connected to the arm so that the arm may be partially rotated about the piston on the hinge 18. When the tampon-ejecting plunger is associated with the outer tube to provide a tampon applicator ready for use, the piston is positioned within the end of the outer tube opposite the end containing the tampon, and the arm is positioned on the exterior of the outer tube, extending in longitudinal alignment with the tube.

A suitable piston includes a pair of integral, generally rectangular-shaped, flat panel members 20, 22 extending at right angles with respect to each other so that in section, they form a cross or an X. One of the panels 20 is solid; the other 22, disposed at right angles thereto, comprises a rim 24 defining its lower and middle portion and an integral, curved, plate-like upper portion 26 which is connected at one edge to the arm 14 by the hinge 18 and which is recessed to receive the end 28 of the arm. The panels are desirably formed in this manner if the tampon-ejecting plunger is molded from a thermoplastic molding material. By making one of the panels solid, as described above, removal of the molded plunger from the mold is simplified.

Each of the panels are of sufficient width to fit within the outer tube in a snug but slideable relationship. The longitudinal outside edges of each of the panels form bearing surfaces which contact the inner wall of the outer tube when the piston is positioned and moved therein and are made sufficiently long so that the piston will not cant or twist and thereby bind as it is moved longitudinally within the outer tube. The forward ends 30, 32 of each of the panels, which engage the inner end of the tampon positioned within the opposite end portion of

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the outer tube, are desirably slightly rounded to avoid the presence of sharp corners at the junction of the longitudinal outside edges of the panels and the forward ends which may cause binding of the piston on the inner wall of the outer tube as it is moved therein.

The end 34 of the solid panel 20 opposite its rounded forward end 32 is straight while the end of the plate-like portion 26 of panel 22 extends beyond the end 34 of the solid panel 30 and is formed with a disc-shaped concavity 36 which extends on one side to the hinge connection. The outside edge of the concavity opposite the hinge terminates in an inwardly extending hook-shaped shoulder 38 which, in conjunction with the disc-shaped concavity, forms a notch 40 for receiving the similarly shaped end of the hingedly connected arm, as described below. A hole 42 is provided in the plate-like portion 26 below the notch through which a withdrawal string 44, attached to the tampon for its removal after use, is threaded, the ends of the withdrawal string extending beyond the ends of the applicator.

The arm 14 of the tampon-ejecting plunger is in the form of an elongated shaft 46 having a length substantially equal to the length of the outer tube. It may be T shaped in transverse section for reinforcement purposes. The end 23 of the arm which is hingedly connected to panel 22 has a foot-shaped member 48 disposed at a slight angle with respect to the longitudinal axis of the arm, the toe or tip 50 of the foot-shaped member being tilted upwardly and extending beyond the inside longitudinal edge of the arm. The end of the toe is connected to the panel 22 at the hinge. The heel 52 of the foot-shaped member opposite the toe hingedly connected to the panel is pointed and has the configuration of the notch 40 formed by the inwardly extending shoulder 38 and the adjacent part of the disc-shaped concavity. The bottom or sole 54 of the foot-shaped member is convexly shaped to the configuration of the bottom of the disc-shaped concavity 36. The disc-shaped concavity and the foot-shaped member at the end of the arm are thus similarly shaped so that the foot-shaped member may be received within the disc-shaped concavity. When the arm is rotated about the hinge, the foot-shaped member fits within the disc-shaped concavity with the pointed heel 52 of the foot-shaped member snapping into fitting engagement within the notch 40.

The inwardly-extending shoulder 38 on the plate-like portion 26 of panel 22 forms the notch with the adjacent part of the disc-shaped concavity for receiving the heel of the foot-shaped member. The shoulder serves as a snap which engages the heel of the foot-shaped member of the arm in a snap fit to secure the arm to the piston in longitudinal alignment with the outer tube prior to operation of the tampon-ejecting plunger to eject a tampon from within the outer tube.

The tampon-ejecting plunger is associated with the outer tube by positioning the piston within the end of the outer tube opposite the end containing the tampon so that substantially all of the piston is within the outer tube. Such positioning places the hinge at the rear end of the outer tube. The arm then falls into position on the outer surface of the outer tube and in longitudinal alignment therewith. As so assembled, the tampon-ejecting plunger and outer tube with a tampon contained therein provide a complete article ready for use. It is thus seen that the over-all length of the assembled outer tube and tampon-ejecting plunger is essentially the over-all length of the outer tube.

The end 56 of the arm opposite the foot-shaped end may be formed with outwardly-extending tangs or tabs 58 to provide a finger-gripping portion so that the arm may be readily lifted from the outer surface of the outer tube and rotated into longitudinal alignment with the tube.

To operate the applicator so that the tampon may be ejected therefrom, the arm is lifted from its position on

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the outer surface of the outer tube by gripping at the tabs and rotated 180° about the hinge to locate the arm to the rear of the outer tube and in longitudinal alignment with the tube. In such rotation, the foot-shaped end of the arm fits into the disc-shaped concavity formed in the end of the panel. The heel 52 of the foot-shaped member is forced over the inwardly extending shoulder 38 on the panel and snaps into engagement within the notch 40. When this point is reached, the arm and piston are secured together in alignment whereupon the arm may be urged longitudinally into the outer tube, pushing the piston before it, so that the forward end of the piston engages the inner end of the tampon to eject it from the outer tube.

The piston and the arm forming the tampon-ejecting plunger are preferably integrally molded as a unit from a suitable plastic material, such as polyethylene. The hinged connection between the arm and the piston may be in the form of a thin, integral web of such plastic material joining the two parts together and having sufficient flexibility to permit the rotation of the arm.

Preferably, the piston and the arm are molded in the form they take when they are assembled with the outer tube ready for use; that is, and as illustrated in FIGS. 1 and 3 of the drawings, the piston and arm are preferably molded in adjoining relationship with the piston adjacent to and spaced from the end of the arm and in longitudinal alignment therewith so that upon positioning the piston within the end of the outer tube, the arm will automatically fall into its prior-to-use position in longitudinal alignment on the outer surface of the outer tube. By forming the piston and the arm in this manner, the arm will tend to remain in its desired position on the outer surface of the outer tube when the tampon-ejecting plunger and the outer tube are assembled.

The above-described embodiment of the invention is illustrative of the preferred form and it is apparent that numerous modifications, variations, and changes may be made. For example, the piston may be of structure other than that described above, as for example, a plurality of panels in other forms, such as a series of spaced, connected discs or the like, which are joined at angles other than 90° to each other. Further, the inwardly-extending shoulder, which serves to position the arm and the piston, may be eliminated providing positive inward movement of the piston is obtained when the arm is aligned therewith and moved inwardly into the outer tube. Arms of forms other than that described above may be suitably employed. Accordingly, such variations, modifications, and changes are contemplated to be within the scope of the invention.

What is claimed is:

1. A tampon applicator comprising an elongated outer tube adapted to receive a tampon in one end portion thereof, an integrally molded tampon-ejecting plunger of plastic associated with said outer tube, said plunger having a movable piston positioned in the end portion of said outer tube opposite the end portion adapted to receive the tampon, and an arm positioned on the exterior of said outer tube, said arm being hingedly connected to said piston by a flexible web of said plastic, said piston having a recess at the end hingedly connected to said arm, the end of said arm at said hinged connection having the configuration of said recess, said arm being rotatable on said hinge into longitudinal alignment with said outer tube whereby said end of said arm is positioned within said recess and said arm may be urged longitudinally into said outer tube to move said piston through said tube.

2. A tampon applicator comprising an elongated outer tube adapted to receive a tampon in one end portion thereof, an integrally molded tampon-ejecting plunger of plastic associated with said outer tube, said plunger having a movable piston positioned in the end portion of said outer tube opposite the end portion adapted to re-

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ceive the tampon, and an arm positioned on the exterior of said outer tube, said arm being hingedly connected to said piston by a flexible web of said plastic, said piston having a notched recess at the end hingedly connected to said arm, the end of said arm at said hinged connection having the configuration of said recess, said arm being rotatable on said hinge into longitudinal alignment with said outer tube whereby said end of said arm may be snap-positioned within said recess and said arm may be urged longitudinally into said outer tube to move said piston through said tube.

3. A tampon applicator comprising an elongated outer tube adapted to receive a tampon in one end portion thereof, a tampon-ejecting plunger associated with said outer tube, said plunger having a movable piston positioned in the end portion of said outer tube opposite the end portion adapted to receive the tampon, and an arm positioned on the exterior of said outer tube, said piston including a plurality of crossed panels angularly disposed with respect to each other, said arm being hingedly connected to one of said panels and being rotatable on said hinge into longitudinal alignment with said outer tube whereby said arm may be urged longitudinally into said outer tube to move said piston through said tube.

4. A tampon applicator in accordance with claim 3 wherein one of said panels has an opening therethrough.

5. A tampon applicator comprising an elongated outer tube adapted to receive a tampon in one end portion thereof, a tampon-ejecting plunger associated with said outer tube, said plunger having a movable piston positioned in the end portion of said outer tube opposite the end portion adapted to receive the tampon, and an arm positioned on the exterior of said outer tube, said piston including a plurality of panels angularly disposed with respect to each other, one of said panels having a disc-shaped concavity at the rear end thereof, said arm being hingedly connected to said one of said panels and having a foot-shaped member having the configuration of said concavity, said arm being rotatable on said hinge into longitudinal alignment with said outer tube whereby said foot-shaped member may be positioned within said disc-shaped concavity and said arm may be urged longitudinally into said outer tube to move said piston through said tube.

6. A tampon applicator in accordance with claim 5 wherein said hinge connection is at the toe of said foot-shaped member.

7. A tampon applicator in accordance with claim 5 wherein said disc-shaped concavity has a notch adapted

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to receive the heel portion of said foot-shaped member in snap-fitting engagement.

8. A tampon applicator comprising an elongated outer tube adapted to receive a tampon in one end portion thereof, a tampon-ejecting plunger associated with said outer tube, said plunger having a movable piston positioned in the end portion of said outer tube opposite the end portion adapted to receive the tampon, and an arm positioned on the exterior of said outer tube, said piston including a plurality of panels angularly disposed with respect to each other, one of said panels have a disc-shaped concavity at the end thereof, said arm being hingedly connected to said one of said panels and having a foot-shaped member having the configuration of said disc-shaped concavity, means on said one panel and on said foot-shaped member for securing the respective parts together, said arm being rotatable on said hinge into longitudinal alignment with said outer tube whereby said foot-shaped member may be positioned within said disc-shaped concavity and said arm may be urged longitudinally into said outer tube to move said piston through said tube.

9. A tampon applicator comprising an elongated outer tube adapted to receive a tampon in one end portion thereof, a tampon-ejecting plunger associated with said outer tube, said plunger having a movable piston positioned in the end portion of said outer tube opposite the end portion adapted to receive the tampon, and an arm positioned on the exterior of said outer tube, said piston including two crossed panels, said arm being hingedly connected to one of said panels, said one panel having a disc-shaped concavity at the end thereof, said arm having a foot-shaped member having the configuration of said cavity canted towards said hinge, said arm being rotatable on said hinge into longitudinal alignment with said outer tube whereby said foot-shaped member may be positioned within said recess and said arm may be urged longitudinally into said outer tube to move said piston member through said tube.

References Cited in the file of this patent

UNITED STATES PATENTS

2,222,088	Petersen	Nov. 19, 1940
2,630,804	Mende	Mar. 10, 1953
3,059,641	Gershen	Oct. 23, 1962
3,059,642	Gershen	Oct. 23, 1962

FOREIGN PATENTS

346,764	Italy	Mar. 5, 1937
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