

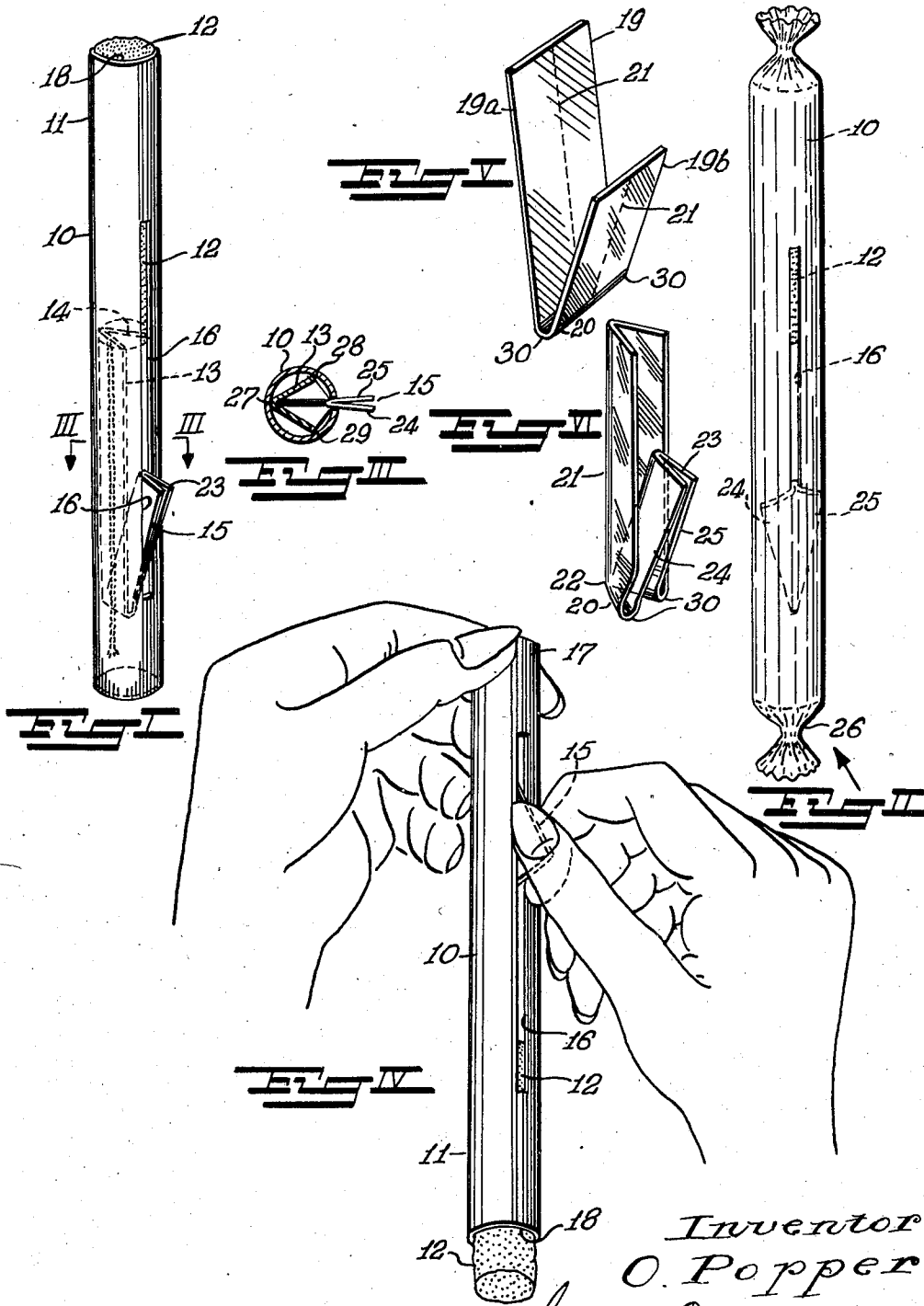
Feb. 25, 1947.

O. POPPER

2,416,642

MEANS FOR THE INSERTION OF INTRA-VAGINAL PACKS

Filed Feb. 18, 1944



Inventor
O. Popper

By *Glenn Downings*
Attys

UNITED STATES PATENT OFFICE

2,416,642

MEANS FOR THE INSERTION OF
INTRAVAGINAL PACKSOtto Popper, Johannesburg, Transvaal,
Union of South AfricaApplication February 18, 1944, Serial No. 522,949
In the Union of South Africa March 13, 1943

3 Claims. (Cl. 128—285)

1

This invention relates to applicators for the insertion of intra-vaginal packs comprising a tubular casing in the forward end portion of which the pack is contained ready for ejection from the casing through an orifice at the forward extremity of the casing, and comprising also a push rod that is housed in the casing towards the rear end of the latter and that is formed towards its rear end with a tongue that extends through a longitudinal slot in the side of the tubular casing.

In the operation of such device, after the applicator has been passed into the vagina, digital traction exerted on the tongue drives the push rod forward in the casing and so causes expulsion of the pack through the orifice of the casing. The forward movement and ejection here mentioned are such with reference to the tubular casing; since the movement relatively to the body preferably consists in retraction of the casing from the vagina, after the casing and its contained pack have been fully inserted therein, and while the push rod is merely held stationary to hold the pack in place.

It is common practice to make such applicators of paper or thin cardboard; thus permitting them to be rejected and destroyed unwastefully, and advantageously from the health point of view, after having been once used.

An object of the present invention is to provide a tongue formation that makes advantageous use of the strength characteristic of sheet material of the kind including paper and cardboard, and which can be made of these materials without likelihood of the tongue tearing when traction is applied to it. Another object is to provide a unit comprising the push rod and tongue that is cheap and is adapted to be readily assembled with, and lock to, the applicator tube. A further object is to enable the slotted applicator tube to be made stronger and stiffer than heretofore.

According to one feature of this invention the tongue is made as a flat fin the width or plane of which extends in the direction of the length of the slot, so that it slides edgewise when travelling along the slot. Its width is thus independent of the width of the slot so that on the one hand it can be as wide as is necessary for strength and on the other hand, the slot in the tubular casing need only be as broad as the thickness of the fin, that is, usually about the thickness of two plies of paper. A narrow slot of this kind weakens the casing to the minimum extent.

For simplicity and cheapness of manufacture

2

and for strength at their junction, it is preferred to make the push rod and the tongue of one piece of sheet material such as paper or thin cardboard; said piece being a strip folded at a transverse fold to produce the push rod element and the fin element extending in the same general direction from the fold but at an inclination such that when the push rod is within the tubular casing, the free or outer end of the tongue extends through the slot to be grasped. The different elements are given the cross-sectional forms suitable to their respective functions. Accordingly in order to form the flat fin the fin element is usually folded longitudinally to form two plies which lie flat with one another where the fin passes through the slot. The push rod is given a V or other cross sectional form which stiffens it for its thrusting function and is also stable within the tubular casing by contacting the inside of the tube at three or more points.

Probably the easiest way to disrupt such sheet material as paper is to start a tear from an edge of the sheet. On the other hand such material is strongest under pure tension. The connection provided by the present invention between the tongue and the push rod is characterised by yielding at the sheet edges to tension transmitted through the tongue and being unyielding at another point so that traction on the tongue definitely drives the push rod forward. In order to facilitate such yielding of the edges and also in order to ensure that the stress on the tongue itself is confined substantially to pure tension, the connection is made a pivotal connection that permits the tongue to swing to or from the push rod, that is in its own plane when it is in fin form.

In particular the connecting formation comprises the aforesaid transverse fold in a strip and also a longitudinal fold therein: said folds intersecting and being sharply creased at their intersection. It is desirable that the transverse fold is not sharply creased towards the edge of the strip.

The invention is illustrated in the accompanying drawings in which

Figure I shows an applicator for an intra-vaginal pack.

Figure II shows the assembly of Figure I enclosed in a transparent envelope, as offered for sale.

Figure III is a cross section on III—III Figure I.

Figure IV shows the device in use.

Figures V and VI illustrate the manufacture of the push rod and tongue from a paper strip.

In the drawings, 10 indicates the tubular casing. Its forward half 11 contains the usual cylindrical pack 12 of compressed absorbent material that is to be deposited in the vagina. This displacement is effected with the aid of the push rod 13 that is initially housed in the rear end of the casing and which contacts at its forward end 14 with the rear end of the pack 12. Extending from the rear end of the push rod and divergently from said rod is a tongue 15 that protrudes through a slot 16 extending longitudinally on one side of the casing. In the use of the device, depicted in Figure IV, the tongue is manually grasped and traction is exerted on it in the direction of the forward end of the casing tube; while counter-traction is exerted on the rear end 17 of the tube, resulting in the push rod relatively moving forward in the casing and relatively ejecting the pack 12 through the orifice 18 at the forward extremity of the tube.

The push rod 13 is of suitable length to cause the tongue 15 to be outside the vaginal canal when the pack 12 is positioned high therein; whilst on the other hand the positioning of the tongue 15 at the rear end of the push rod and its movement through the slot 16 in the side of the tube 10 enables the whole applicator to be of small length relatively to the length, or extent of relative movement, of any part necessary to ensure such high insertion of the pack.

According to the present invention said tongue 15 is in the form of a flat fin that slides edgewise in the longitudinal slot 16. The push rod and fin are produced as a single unit and from a single strip of such sheet material as paper or thin cardboard. Figures V and VI illustrate a method of producing the unit; according to which a strip of paper 19 equal in length to the combined length of the push rod and the fin is lightly bent back towards itself—but not sharply creased—at a transverse fold 20, and thereby divided into the longer push-rod element 19a and the shorter fin element 19b. Then, with said elements inclined to one another at about the angle they occupy in the finished unit, the paper is folded laterally upon itself along its lengthwise centre line 21. This folding is preferably such as to produce a sharp and permanent crease along said centre line and particularly at the point 22 of intersection of the transverse fold 20 and the longitudinal fold 21. The result is much as shown in Figure VI; having a form which owing to the elastic flexibility of the longitudinal fold, can easily be flattened or allowed to expand to a form having a definitely V shaped cross section.

The unit thus completed is assembled with the casing 10 by pushing it through the tube slot 16, when it is in its flattened form with its edge 21 presented first to the slot. The push rod element passes wholly through the slot; and locks itself within the tube owing to its leaves spreading apart wider than the slot. The end portion 23 of the fin however remains outside the slot, the angular relationship of the elements 13, 15 being arranged to produce that result; and said portion 23 constitutes the finger hold for operating the unit. The two leaves 24, 25 of the fin are then folded back against the external surface of the tube and there retained by the wrapping 26 shown in Figure II, so that the wrapped device is of cylindrical form suitable for economical packaging of a number of them together.

The V cross-sectional shape of the push rod

is well known to be one which gives to a paper rod the substantial stiffness necessary to thrust the pack, whilst providing a forward end that is sufficiently widely spread to prevent its penetrating the pack material. The width of the strip 19 is so chosen that the V contacts the interior of the tube at its apex, indicated by 27 in Figure III, and its two points 28, 29 and is thus a good sliding fit in the tube.

The traction which is exerted at the forward end 23 of the fin, when the device is put to use, could cause either tearing of the fin itself, or parting of the root 20, 22 of the fin from the push rod. There is little danger of the first happening if the stress on the fin is limited to pure tensional stress; and such limitation follows if the connection between the fin and the push rod is a purely pivotal connection. The unit described provides a close approximation to a purely pivotal connection at and about the point 22. The transverse crease 20 gives flexibility enabling the fin to swing about said point 22 in the plane, radial to the tube, in which the fin normally lies. The double thickness of paper around said point 22 provides adequate strength; and the double folding of the paper about the same point avoids the presence of an edge which would encourage the start of a tear. At the actual edges 30 of the strip the occurrence of stress sufficiently high to start a tear is avoided, since tension exerted along said edges merely causes them to yield in the sense that strip material from the push rod element 19a can readily roll round the fold 20 into the fin element 19b. Consequently both the fin and the junction of the fin with the push rod can be amply strong without the necessity of using paper of particularly good quality.

Moreover the edgewise positioning of the fin in the slot 16 enables the latter to be made not materially wider than about the double thickness of paper comprised in the flattened tongue of Figure VI, so that the slot does not undesirably reduce the stiffness of the tube.

I claim:

1. An applicator for an intravaginal pack, comprising a tubular casing formed with a longitudinal slot in its side and providing an ejection orifice at its forward extremity, the forward end of the casing cavity being adapted to contain the pack, and comprising a push rod housed within the rear end portion of the casing and movable forwardly therein to eject the pack through said orifice, said push rod being provided with a tongue projecting from its rear end and through the longitudinal slot of the casing, in which both the push rod and the tongue are formed of a continuous strip of sheet material folded transversely to provide the push rod and the tongue extending from the transverse fold materially in the same direction, the junction formation between the push rod and the tongue including a longitudinal fold intersecting the transverse fold, both said folds being sharply creased at their intersection to cause the intersection to be the pivot point between said push rod and said tongue.

2. The applicator claimed in claim 1, in which the sharp longitudinal crease extends through the length of the tongue so that the latter readily assumes a two-ply flat fin form where it passes through the longitudinal casing slot.

3. In an applicator for the insertion of an intravaginal pack and of the kind comprising a tubular casing formed with a longitudinal slot in its side and providing an ejection orifice at its

forward extremity, the forward end of the casing cavity being adapted to contain the pack, and also comprising a push rod housed within the rear end portion of the casing and movable forwardly therein to eject the pack through said orifice, a push rod provided with a tongue connected to and projecting from the rear end of said push rod and through the longitudinal slot of the casing, said tongue being formed as a flat fin the plane of which extends lengthwise of said slot, said push rod being arranged to be thrust forward by means of said tongue; said push rod and said fin shaped tongue being elements of one piece of folded paper.

OTTO POPPER. 15

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
2,222,088	Petersen	Nov. 19, 1940
2,351,836	Popper	June 20, 1944
2,109,411	Buttschau	Feb. 22, 1938
1,290,164	Fuller	Jan. 7, 1919
1,926,900	Haas	Sept. 12, 1933