

[54] INTRAUTERINE DEVICE

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[51] Int. Cl. A61f 5/46

[58] Field of Search 128/127, 128, 129, 130,
128/131

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[57] ABSTRACT

An intrauterine device has an envelope, when unfolded, of approximately triangular shape in plan. A filling tube with a loosely tied knot therein connects to the envelope near a triangular apex. A cord is joined to the envelope on a side opposite the apex. An inserter rod has a rounded inner end with a notch in it. An at least partially looped portion of the cord is removably received in the notch. The cord can be held immobile in the notch to hold the filled envelope in emplaced position as the tube is pulled to tighten the knot.

5 Claims, 3 Drawing Figures

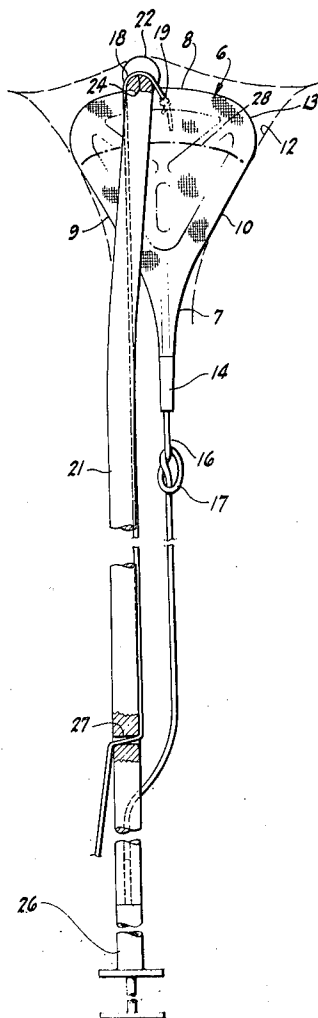


FIG-1

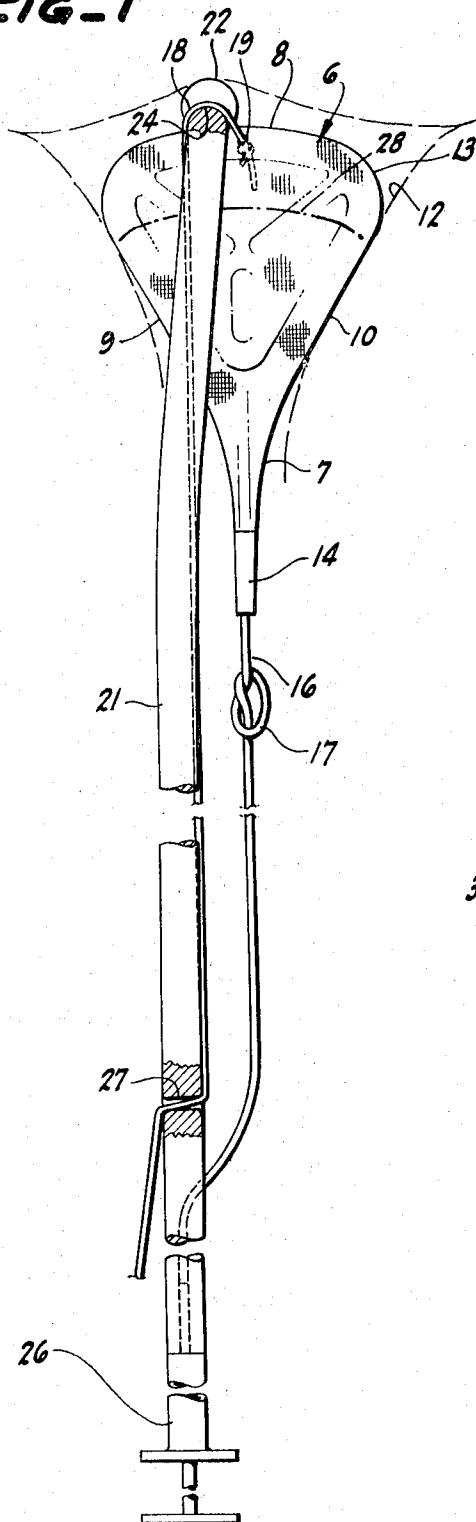


FIG-2

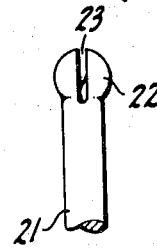
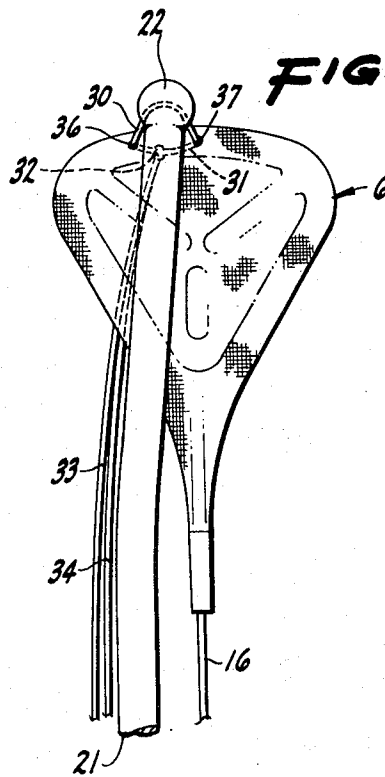


FIG-3



INTRAUTERINE DEVICE

The intrauterine device disclosed herein is closely related to an intrauterine device disclosed in my co-pending application entitled "Intrauterine Device And Process Of Making The Same," filed Mar. 6, 1973 with Ser. No. 338,560. The present disclosure has to do with the accurate introduction and positioning of such an intrauterine device.

In one class of intrauterine devices there is provided an envelope initially uninflated and readily folded into a small compass. Upon installation the envelope is unfolded and inflated into its active form. The filling is done with the intrauterine envelope in situ. There is usually provided a loosely tied knot in the filling tube which is tightened after the filling has been accomplished. Pulling on the tube to tighten the knot sometimes produces dislodgement or malpositioning of the intrauterine device. This is highly undesirable.

It is therefore an object of the invention to provide an intrauterine device of the mentioned sort in which there is a provision for holding the intrauterine device accurately in place as the tube knot is tightened.

Another object of the invention is to provide an intrauterine device in which the installation mechanism is effective accurately to position the device initially and to hold the device in position during all installation maneuvering.

Another object of the invention is to provide an intrauterine device that corresponds generally with uterine devices heretofore available but which can be easily, accurately and permanently positioned.

Another object of the invention is to provide a way of exerting an inwardly directed force on the intrauterine device despite outward pulling thereon.

A further object of the invention is to provide an improved intrauterine device.

Other objects, together with the foregoing, are attained in the embodiments of the invention disclosed in the accompanying description and illustrated in the accompanying drawings, in which:

FIG. 1 is a plan, somewhat diagrammatic, and with certain portions being broken away, disclosing the interior in cross-section, of one form of intrauterine device corresponding to the present invention;

FIG. 2 is a fragmentary side elevation of a portion of the structure shown in FIG. 1, the cord being shown in cross-section; and

FIG. 3 is a plan similar to FIG. 1 but showing another version of the intrauterine device pursuant to the present invention.

While the intrauterine device pursuant to this disclosure can be embodied in a large number of different ways, it has successfully been embodied as shown herein. In one form the intrauterine device is made substantially as disclosed in the above-mentioned co-pending application and includes an envelope 6 of flexible material arranged, when uninflated, to have approximately a triangular shape. That is, the envelope in plan has an apex 7 and an opposite side 8 with adjacent sides 9 and 10 adapted approximately to fit the normal uterine cavity 12. The envelope 6 is often provided with an uninflatable margin 13 extending most of the way therearound and merging with a connection 14 at the apex 7 to a filling tube 16 of flexible material and ordinarily supplied with a loosely tied knot 17 therein. The device 6 is further provided with a flexible cord 18 customarily affixed to the device by being passed

through an opening 19 in the marginal portion 13 and secured by a knot or comparable fastening. As shown, the opening 19 is on the side 8 opposite the apex 7.

For use with the intrauterine device and in combination therewith there is also afforded an inserter rod 21. This conveniently is a plastic molded member having an inner end 22 of approximately spherical shape somewhat enlarged but merging with the remainder of the rod. In accordance with the present invention the end 22 is bifurcated by a diametrically extending slot 23 or notch of a size and extent readily to receive the cord 18 with a reasonably tight yet nevertheless releasable fit. The cord can be formed as at least a partial loop as shown in FIG. 1 to lie against an arcuate or curved bottom portion 24 of the slot or notch in the rod end. The other end of the rod 21 is designed to receive and carry the filling tube 16 for the temporary connection of a filling syringe 26. Furthermore, the rod is provided with a cross bore 27 to receive and temporarily hold or anchor a portion of the cord 18.

When initially packed, the intrauterine device and the rod are first secured together, substantially as shown in FIG. 1, but further the intrauterine envelope, unfilled, is wrapped around the cord 18 and the inner portion of the rod to afford a relatively compact body. The envelope is held in furled condition by a dissolvable enclosing cap, not shown herein but disclosed in the above-mentioned co-pending application.

For insertion, the wrappings are removed from the package and the still furled assembly is inserted into the uterine cavity 12, with the rod 21 being used somewhat as a sound, until the end 22 approaches or contacts the fundus of the uterus. During this insertion it may be that the intrauterine device 6 occupies a position approximately as shown by the dotted lines 28 and comes temporarily to rest not completely into the uterine cavity. Thereupon the physician may, by holding the rod 21 and by pulling lightly on the cord 18, advance the device 6 from the dotted line position (FIG. 1) into the solid line position, the desired final position closely adjacent to the uterine fundus.

The previously filled syringe 26 temporarily attached to the end of the tube 16 is then emptied, thus filling the intrauterine device 6. When the device has so been filled, communication between the exterior and the intrauterine device is cut off by tightening the knot 17. Heretofore, pulling on the available portion of the tube 16 to tighten the knot has been prone to dislodge the just installed intrauterine device at least partially. In the present case, however, the physician by holding the cord 18 tightly against the rod 21 and then pulling on the tube 16 adjacent the syringe 27 is able to tighten the knot since the cord 18 affords an opposite resisting or anchoring force.

As soon as the knot 17 has been tightened the cord 16 is severed below the knot and the rod 21 is withdrawn. The withdrawal movement disengages the notch 23 from the at least partially looped part of the cord 18. The cord may be left available for ultimate withdrawal of the intrauterine device if desired.

To assist in maintaining the cord 18 and the rod in close relationship during all of these maneuvers, the cord is passed through the cross bore 27 so that the physician's thumb or finger can, by overlying that portion of the cord, hold it quite easily in position and against a substantial tension force. In this way the physician has complete control of the positioning of the in-

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trauterine device despite the extra tug on it during tightening of the knot 17.

As particularly shown in FIG. 3, the arrangement is substantially as previously described except that the cord 30 although still releasably lying within the notch 23 of the rounded end 22 of the rod 21 is provided with a complete loop 31 which is closed by a knot 32. This leaves two portions 33 and 34 of the cord extending to be passed through the opening 27 in the rod and affords a pair of points 36 and 37 for the loop to be anchored in the margin 13 of the intrauterine device. There is thus afforded a firm interconnection between the cord and the device. While there is not the easy, relative sliding movement of the arrangement of FIG. 1, there is a close connection between the rod and the intrauterine device. Upon initial insertion the device necessarily follows the rod and is positioned adjacent the uterine fundus near the rounded end 22. It is not necessary to pull the cord in order to position the device in its final location. Also, when the tube 16 is pulled to tighten the knot 17 the loop 31 affords a firm support and the physician need not then hold the cords 33 and 34 securely. Upon final positioning of the device, the rod can be detached from the loop 31 just as before.

What is claimed is:

1. In combination, an intrauterine device including an envelope, a loosely knotted filling tube connected to and extending from one portion of said envelope, a

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cord secured to another portion of said envelope and having at least a partial loop, an inserter rod, and means on said inserter rod contoured to be engaged with and disengaged from said partial loop in said cord.

2. A combination as in claim 1 in which said means includes a curved bottom notch adjacent one end of said rod.

3. A combination as in claim 1 in which envelope cord extends from said envelope in a direction opposite to said tube then loops over the end of said rod and finally extends in a direction effective to withstand a pull on said tube.

4. A combination as in claim 1 in which said envelope in plan when unfolded is approximately a triangle, said tube engages said envelope adjacent an apex of said triangle and said cord engages said envelope at a side opposite said apex.

5. In combination, an intrauterine device including a rod having a rounded end, an envelope when empty wrapped around said rod adjacent said rounded end, a filling tube communicating with said envelope adjacent one end of said envelope and extending alongside said rod in a direction away from said end, a cord engaging said envelope adjacent the other end of said envelope and curved around said rod adjacent said rounded end and extending alongside said rod and said filling tube.

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