United States Patent [19]

Abramson

[11] **3,783,861**

[45] **Jan. 8, 1974**

[54] INSERTER FOR INTRAUTERINE DEVICES

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[22] Filed: **June 11, 1971**

[21] Appl. No.: **152,101**

[52] **U.S. Cl.** **128/127**

[51] **Int. Cl.** **A61f 5/46**

[58] **Field of Search** 128/127, 128, 129, 128/130, 260

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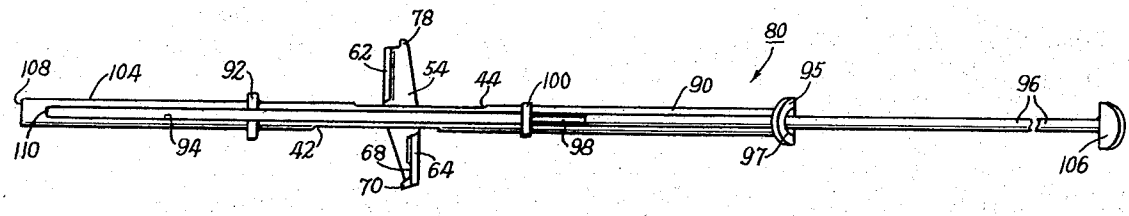
[57] **ABSTRACT**

An instrument for the insertion into the uterus of a flexible contraceptive device formed from a tubular barrel having a first end for insertion into the uterus and an adjustable stop member for engaging the cervical is at a selected distance for the anterior end of the insertion end. The barrel has diametrically opposed axially extending apertures therein located posteriorly of the stop member for receiving the intrauterine device with the first arm thereof extending through the apertures transversely of the barrel and the second arm extending axially within the barrel toward the posterior portion thereof. A crossbar is provided on the barrel adjacent the apertures for folding the first arm into the barrel adjacent the second arm and substantially parallel thereto. A plunger member, telescopically inserted in the posterior portion of the barrel, has a free end adapted to move the folded intrauterine device from its position adjacent the apertures through the first barrel end to deposit the device in the uterus.

27 Claims, 14 Drawing Figures



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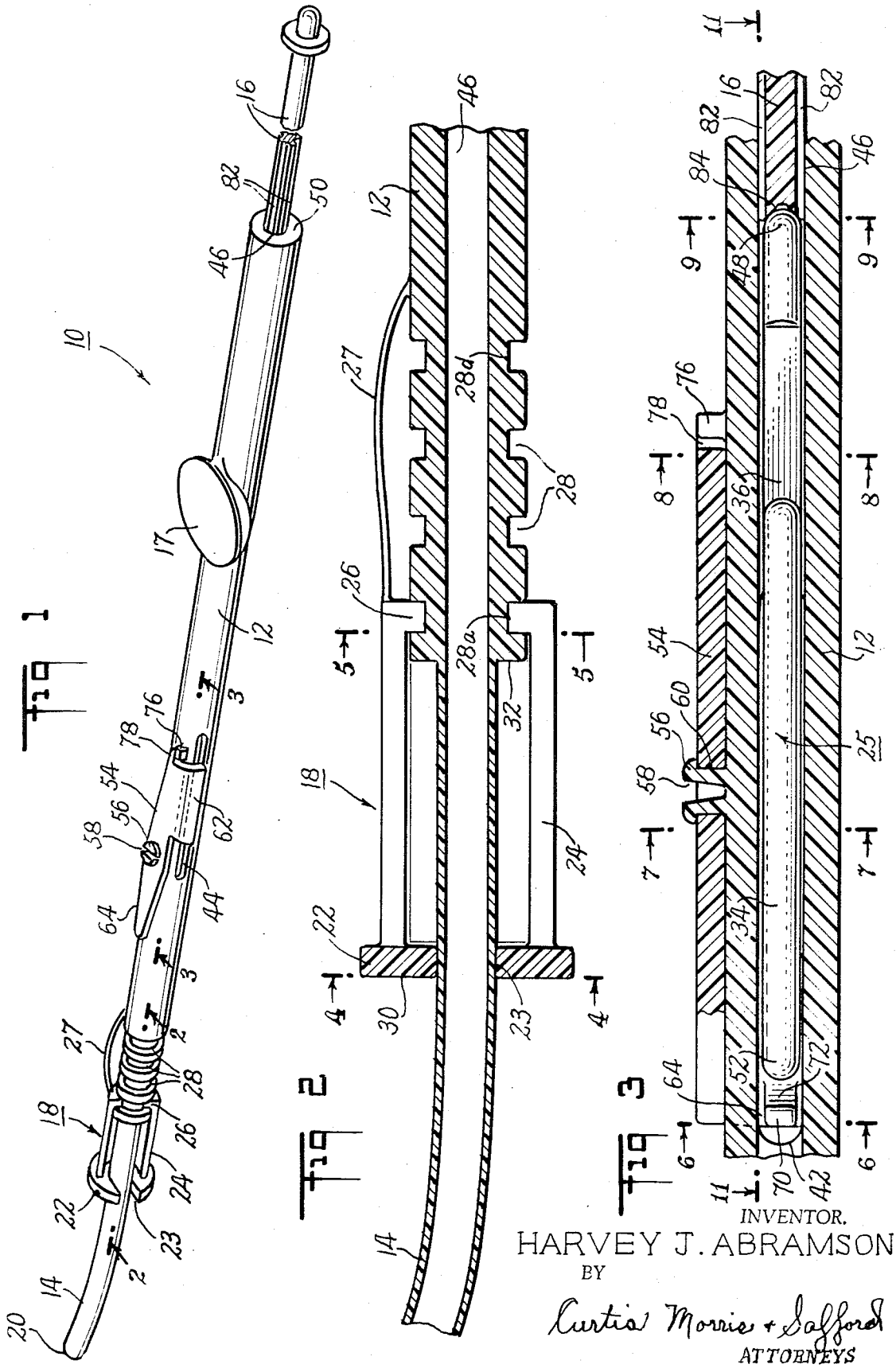

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Fig 4

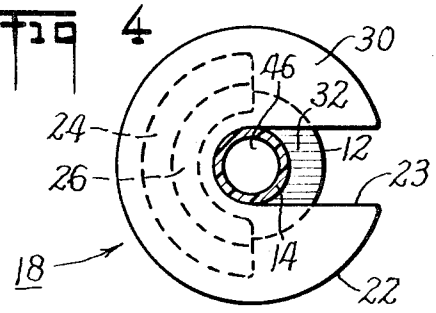


Fig 5

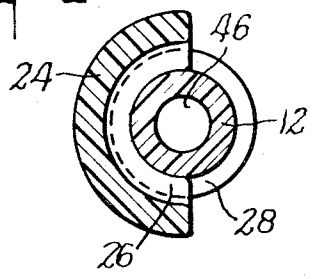


Fig 6

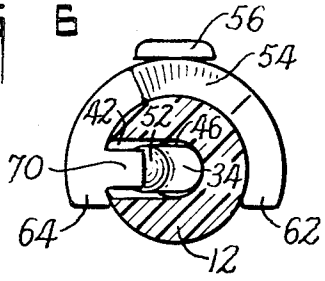


Fig 7

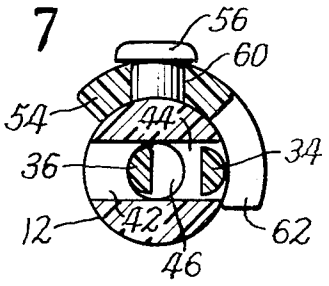


Fig 8

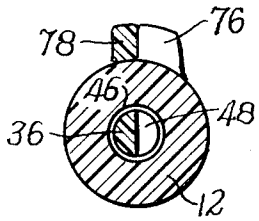


Fig 9

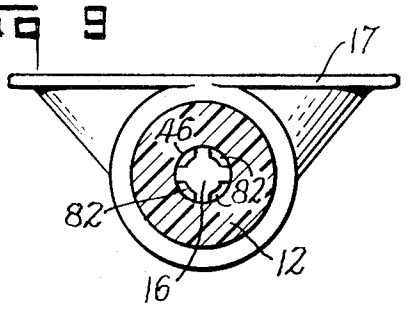


Fig 10

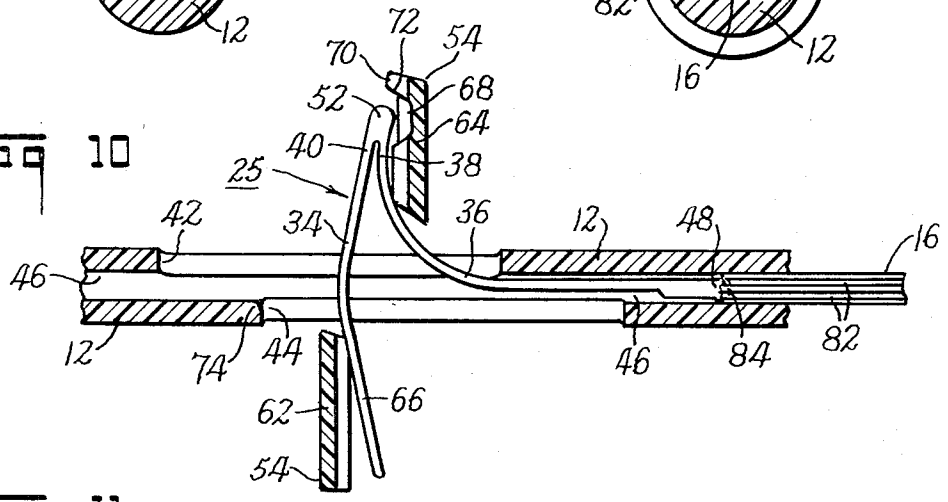
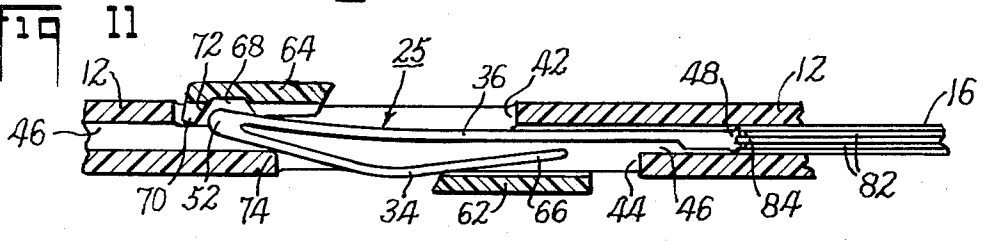


Fig 11



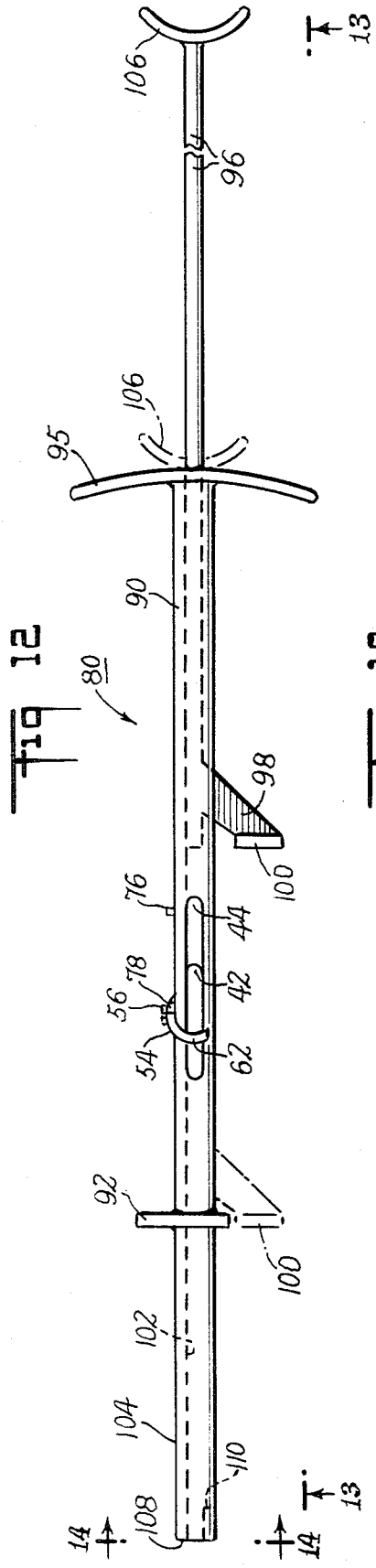


Fig 12

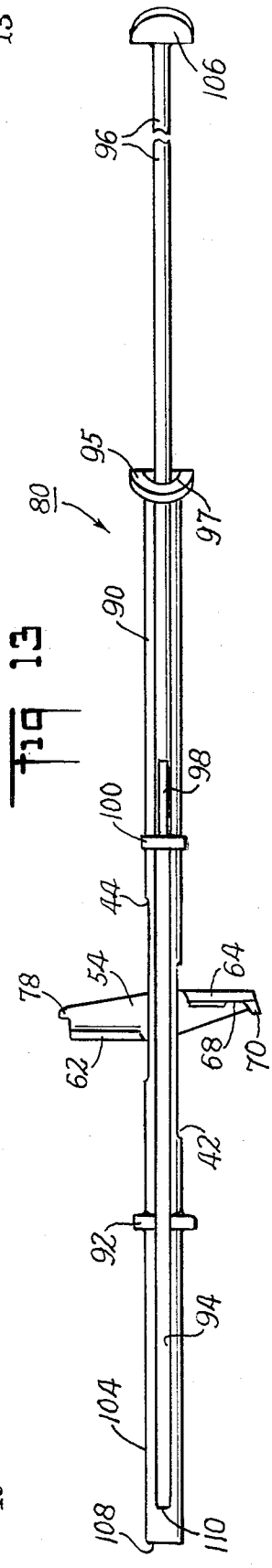


Fig 13

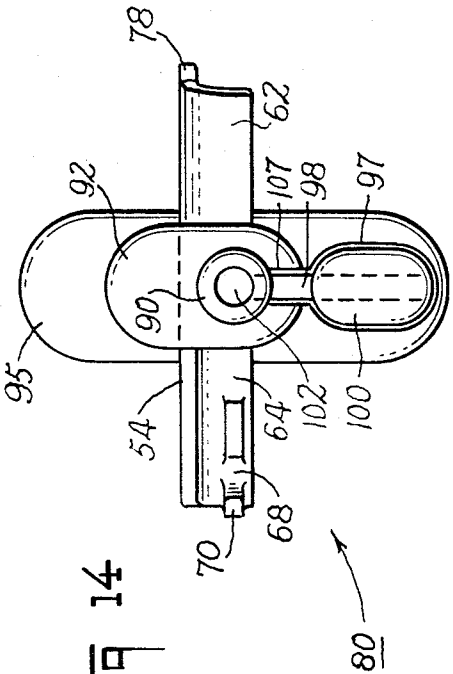


Fig 14

INSERTER FOR INTRAUTERINE DEVICES

This application is a continuation-in-part of my copending U.S. application Ser. No. 836,371 filed June 25, 1969.

This invention relates generally to an inserter for the insertion into the uterus of a flexible contraceptive device.

It is known in the prior art that the presence of a foreign object in the uterus discourages conception. This phenomenon has been medically explored for the intentional prevention of conception by insertion into the uterus of so-called intrauterine contraceptive devices, hereinafter sometimes referred to as IUD's, such as the well known Lippes loop, which commonly comprise a ring, spiral or zig-zag of physiologically inert material, commonly plastic.

The employment of such devices for contraception has heretofore been subject of numerous disadvantages. Such devices have generally caused distortion of the uterus in the dorsal, ventrical, and lateral directions, causing discomfort, bleeding and muscular spasms tending to eject the contraceptive device from the uterus. Further, the structure of such devices has heretofore not always been such as to discourage involuntary ejection thereof from the uterus. In addition, since the dimensions assumed by certain of the prior art devices when in a form suitable for insertion into the uterus, either prevent or make difficult their insertion into a nulliparous cervical canal, it is often necessary to dilate the cervix and to administer general anesthesia. Finally, the insertion of such intrauterine devices has also been accompanied by a significant danger of puncturing the uterine wall because insertion involves pushing a device from a suitable carrier instrument into the uterus in the direction of the uterine fundus. By inadvertence or miscalculation, the physician inserting the device may unknowingly push the device into or through the uterine wall thereby giving rise to serious medical complications.

An intrauterine device which overcomes many of the disadvantages of previously proposed IUD's comprises a device having a first horizontally disposed arm and a second arm, substantially transverse to said first arm and coplanar therewith, and depending from said first arm. In order to insert an intrauterine device of this type into the uterus it is necessary to fold the device into a compact configuration for it to be passed through the cervical os. In addition, it is desirable to place such an intrauterine device, or any intrauterine device, in the uterus at a predetermined distance from the cervix to assure proper positioning thereof and to avoid the possibility of damage to or puncture of the uterine wall.

Accordingly, it is an object of the present invention to insert an intrauterine device having substantially transverse arms.

It is another object of the invention to insert such as intrauterine device at a predetermined location within the uterus and at a predetermined distance from the cervix.

It is another object of the present invention to minimize and substantially eliminate the inadvertent puncturing of uterine walls by insertion of intrauterine devices.

It is still another object of the invention to provide an intrauterine device inserter which lends itself to sterile packaging in combination with an intrauterine device and which is disposable after insertion of the device in the uterus.

Yet another object of the invention is to fold an intrauterine device having substantially transverse arms into a compact configuration for insertion through a tubular barrel into the uterus.

In accordance with an aspect of this invention, an instrument for the insertion into the uterus of a flexible contraceptive device is provided having a tubular barrel adapted to receive the intrauterine device, which barrel includes an insertion end adapted to be passed through the cervix. The barrel is provided with a removably mounted stop member selectively mountable on the barrel at a plurality of selected distances from the anterior end of the insertion end, which distances correspond respectively to predetermined depths of insertion of the insertion end into the uterus. A plunger is telescopically inserted in the posterior portion of the barrel and has a free end which is operably engageable with the intrauterine device to move the IUD from its initial position in the barrel through the insertion end whereby the device is deposited in the uterus at the predetermined location.

In the preferred embodiment of the invention the insertion instrument is utilized for inserting a flexible contraceptive device including a first transverse arm and a second arm coplanar with the first arm and dependent therefrom at one end thereof. In this embodiment the tubular barrel is provided with diametrically opposed axially extending apertures at an intermediate portion thereof through which the intrauterine device is received within the barrel. Initially, the intrauterine device is positioned with the first arm thereof extending through the apertures transversely of the barrel and the second arm thereof extending from the point of connection with the first arm through one of the apertures and into the barrel, with the major portion of the second arm extending axially within the barrel towards the posterior portion thereof. A pivotally mounted crossbar member is provided on the barrel adjacent the apertures, which crossbar has abutment means for engaging the intrauterine device at its initial position so that upon rotation of the crossbar to a position in generally axial alignment with the barrel, the first arm of the IUD is folded into the barrel adjacent the second arm and substantially parallel thereto.

Initially the IUD is placed in the inserter with the crossbar in its open configuration and the combination is sterilized and packaged for shipment. Immediately prior to use, the physician rotates the crossbar to fold the IUD within the barrel; the plunger is then engaged with the end of the second arm and is moved to deposit the IUD within the uterus. As the IUD passes out of the free end of the barrel, it springs open to its original configuration and is engaged with the uterine walls to perform its contraceptive function.

In another embodiment of the invention the barrel is provided with an elongated axially extending slot along substantially the entire length thereof. The plunger in this embodiment has an auxiliary stop member extending through the slot. During insertion of the IUD this auxiliary stop member is moved into engagement with the cervical os adjacent the stop member on the barrel as the plunger moves the intrauterine device from its initial position adjacent the apertures. After the auxiliary stop member engages the cervical os, further urging

of the plunger towards the insertion end of the inserter causes the barrel and the insertion end to move rearwardly with respect to the plunger, thereby freeing the intrauterine device and depositing it at the desired predetermined location within the uterus.

The above, and other objects, features and advantages of this invention, will be apparent in the following detailed description of illustrative embodiments thereof which are to be read in connection with the accompanying drawings wherein:

FIG. 1 is a perspective view of an inserter for an intrauterine device according to one embodiment of the present invention;

FIG. 2 is a sectional view taken on line 2—2 of FIG. 1;

FIG. 3 is a sectional view taken on line 3—3 of FIG. 1;

FIGS. 4 and 5 are sectional views taken on lines 4—4 and 5—5 of FIG. 2;

FIGS. 6–9 are sectional views taken respectively on lines 6—6, 7—7, 8—8 and 9—9 of FIG. 3;

FIG. 10 is a plan view in section of a portion of the barrel and crossbar in its open or transverse configuration and showing a preferred IUD for use with the inserter;

FIG. 11 is a sectional view similar to FIG. 10 and taken on line 11—11 of FIG. 3 illustrating the crossbar in its generally axially aligned configuration and with the IUD in its folded configuration;

FIG. 12 is an elevation view of another embodiment of the present invention;

FIG. 13 is a bottom view taken on lines 13—13 of FIG. 12; and

FIG. 14 is an end view taken on line 14—14 of FIG. 12.

Referring to the drawings in detail, and initially to FIG. 1 thereof, it will be seen that IUD inserter 10 embodying the present invention, as shown therein, comprises tubular barrel 12 adapted to receive an IUD and having insertion end 14 through which the IUD is urged by plunger 16 into position within the uterus.

In operation, insertion end 14, which is formed with a smaller outside diameter than the remainder of barrel 12, is inserted through the opening in the cervix. This construction is particularly advantageous when inserting an IUD in a nulliparous cervical canal wherein the cervical opening is generally quite small. In addition, insertion end 14 is slightly curved in an arc conforming generally to the natural curvature of the uterine cavity, thereby minimizing the possibility of puncturing the walls of the uterus during insertion of the IUD. Barrel 12 is also provided with a thumb rest 17 which is located on the side of the barrel corresponding to the direction in which insertion end 14 is curved. In this manner, the physician is provided with an external indication of the direction of curvature of insertion end 14 during insertion of the IUD so that he is assured that end 14 is positioned within the uterine cavity along a path corresponding to the natural curvature thereof, thus minimizing the possibility of his puncturing the uterus.

Due to the natural variation in size of uterine cavities according to the patient's age and prior births, the preferred clinical procedure is for the physician initially to measure the depth of the uterus in order to determine whether or not it is capable of accepting and retaining an IUD. Moreover, the depth measurement permits the physician to determine and select the optimum depth of the insertion of the IUD within the uterine cavity being examined. A number of instruments are presently available which provide accurate measurements of uterine depths.

The IUD inserter of the present invention is constructed so that the physician may utilize the information obtained by such measurements to insure insertion of the intrauterine device at the desired location within the uterus. To perform this function, barrel 12 is provided with stop member 18 which is removably mounted on the barrel at positions posteriorly of anterior end 20 of the insertion end portion 14. Stop member 18 is provided with abutment member 22 which is generally disc-shaped (see FIG. 4). Member 22 receives end portion 14 through slot 23 therein and is connected to semi-cylindrical collar 24. The rear end of collar 24 is provided with internally extending flange portion 26 (see FIG. 5) selectively received within annular grooves 28 formed on the surface of barrel 12 rearwardly of insertion end 14. The location of each of the annular grooves 28 and the length of the semi-cylindrical collar 24 are selected so that the distance from face 30 of abutment member 22 to end 20 of insertion end 14 corresponds with selected predetermined depths of insertion in the uterus. When instrument 10 is used to insert an IUD in the uterus, abutment surface 30 is engaged with the cervical os and that portion of insertion end 14 which is forwardly thereof is passed through the cervical opening into the uterus.

The surface of barrel 12 is preferably provided with indicia embossed therein to give the physician an indication of the distance between end 20 and surface 30 for each of the positions at which flange 26 may be inserted at a recess 28. Typically, annular recesses 28 are positioned at half centimeter intervals so that when flange 26 is positioned at first recess 28*a* on the barrel (see FIG. 2) abutment surface 30 is 6.5 centimeters from end 20; when flange 26 is engaged in last recess 28*d*, surface 30 is positioned 8 centimeters from the end 20. The length of collar 24 is selected so that when flange 26 is secured in recess 28d surface 30 is positioned forwardly of surface 32 of barrel 12, whereby the recesses 28 are covered to prevent damage to the walls of the vagina and only the narrow outside diameter insertion end 14 is inserted within the uterus. In addition, stop member 18 is secured to barrel 12 by integral flexible connecting member 27. The latter prevents loss of member 18 in the vagina should flange 26 become disengaged with its associated recess. When flange 26 is in the last recess 28*d*, there is an excess length of member 27 available; this length is accommodated by rotating the member 18 in the recess to wrap the excess length of member 27 about barrel 12.

It is contemplated that stop member 18 may be advantageously utilized with an insertion device adapted to insert any of the various previously proposed intrauterine devices, since it is desirable to insert all IUD's at a predetermined location in the uterus.

In the preferred embodiment of the present invention, the inserter 10 is utilized to insert an intrauterine device having a first horizontally disposed arm and a second arm, substantially transverse thereto, coplanar therewith, and depending therefrom. FIG. 10 shows IUD 25 of this type, comprising first transverse arm 34 and second arcuate arm 36 connected at its end 38 to end 40 of arm 34.

In order to insert IUD 25 within barrel 12, the latter is provided with diametrically opposed axially extending apertures 42 and 44 which are slightly laterally offset, as seen in FIG. 10, for reasons more fully described hereinafter. Initially, IUD 25 is positioned with its second arm 36 in bore 46 of barrel 12 with its free end 48 directed towards posterior portion 50 of barrel 12. In this configuration transverse arm 34 extends through apertures 42 and 44 and point of connection 52 between arms 34 and 36 is located exteriorly of barrel 12.

Crossbar 54 is rotatably mounted on barrel 12 for folding first arm 34 of IUD 25 into the barrel prior to insertion in the uterus. As is best seen in FIGS. 1 and 3, barrel 12 is provided with upstanding protrusion 56 which is split, as at 58, and provides the pivotal mounting for the crossbar. The split configuration provides a frictional engagement with the walls of bore 60 in crossbar 54 to maintain the bar on the barrel. Initially the crossbar is positioned in its transverse configuration with IUD 25 inserted therein and the combination is packaged in a sterile condition for later use by a physician.

Crossbar 54 is provided with depending abutment members 62 and 64 (FIGS. 6, 10 and 11) which are adapted respectively to engage IUD 25 at free end 66 of its first arm 34 and to engage its second arm 36 adjacent the point of connection 52 between the arms. As seen in FIG. 10, abutment surfaces 62 and 64 are located on opposite sides of barrel 12 and on opposite sides of IUD 25.

When the physician is ready to insert the IUD within the patient, he measures the depth of the uterus, as described above, and positions stop member 18 at the desired depth of insertion. Thereafter, he rotates crossbar 54 about its pivot 56 and in this manner engages abutment surfaces 62 and 64 with IUD 25 and moves the latter into its folded configuration shown in FIGS. 7 and 11. In this configuration, crossbar 54 is positioned in generally axial alignment with the barrel and arm 34 is positioned adjacent arm 35 and is substantially parallel thereto.

Abutment member 64 is provided with recess 68 which is adapted to accommodate the point of connection 52 between arms 34 and 36 when the device is in its folded configuration. In addition, abutment member 64 includes extension 70 which, when crossbar 54 is in its aligned configuration, extends through aperture 42 into the barrel. Extension 70 is provided with a ramp surface 72. When plunger 16 is moved forwardly to deposit IUD 25 within the uterus, the point of connection 52 of the IUD engages ramp surface 72 and is guided into bore 46 of the barrel. Because apertures 42 and 44 are slightly laterally offset, edge 74 of aperture 44 engages arm 34 when the IUD is folded in the barrel and guides that arm into the barrel. Arm 34, being of flexible construction, is thus readily directed into bore 46 with arm 36.

Barrel 12 is provided with integral upstanding protrusion 76 (FIGS. 1 and 8) which cooperates with an extension 78 on crossbar 54 to hold the latter in its closed configuration during insertion of the device. The IUD is formed of a flexible material, usually plastic, and the plastic memory of the material normally biases the IUD into its open configuration; abutment members 76 and 78 are positioned to hold the crossbar against this bias when the IUD is folded. Barrel 12 is formed of a flexible material such as plastic so that abutment member 76 flexes out of the way of abutment member 78 when crossbar 54 is rotated to its closed configuration. However, the material is of sufficient strength to hold the crossbar in its closed configuration against the bias of IUD 25.

In the preferred embodiment of IUD 25 shown in FIG. 10, the free end 48 of arm 36 is generally arcuate and is provided with a string (not shown) which is utilized in a conventional manner for removing the IUD from the uterus. Also, after the IUD is inserted, the string extends through the cervical opening into the vaginal cavity and provides a method for the patient to check whether or not the IUD is in place. In order to accommodate the string within barrel 12 prior to and during insertion, plunger 16 is formed with a generally cruciform cross-sectional configuration in the anterior end portions thereof so that grooves 82 (note FIGS. 1 and 9) are formed on its surface. The string is accommodated within one of the grooves 82 during insertion. In addition, forward end 84 of plunger 16 has a generally concave configuration (see FIG. 10) to receive end 48 of arm 36 and to provide adequate support therefor during insertion.

The material from which the instruments contemplated according to the present invention can be fashioned is not critical, however, the use of plastic is particularly convenient because the devices can be inexpensively manufactured and then disposed of after use. The manufacture of the barrel from transparent or semi-transparent material such as linear polyethylene permits the physician to observe the proper functioning of the device prior to insertion of the IUD into the uterus.

Referring now to FIGS. 12–14 of the drawings, another embodiment 80 of the present invention is illustrated in which barrel 90 is provided with crossbar 54 and apertures 42 and 44 in the manner of the previously discussed embodiment in order to receive and fold an IUD having transverse arms within the barrel. In this embodiment, barrel 90 is provided with generally oval-shaped stop member 92 integrally formed on the surface of the barrel. It is noted that while stop member 90 is shown herein as integral with the barrel, it is contemplated that a stop member similar to the adjustable stop member 18 of the previously discussed embodiment may also be utilized herein.

Barrel 90 is also provided with longitudinally extending slot 94 in the lower surface thereof and transverse finger portion 95. In this case plunger 96 is provided having extension 98 thereon with auxiliary stop member 100 at the end thereof. After the IUD is inserted within barrel 90 and folded to its closed configuration as in the previous embodiment of the present invention, plunger 96 is inserted into the barrel. It is noted that finger portion 95 is provided with complementary apertures 97 therein to accommodate stop arm 98 and with auxiliary stop member 100 as the plunger is inserted in bore 102 of the barrel.

The instrument is then inserted in the vagina and forward end 104 of barrel 90, which end may be curved in the manner of insertion end 14 of the prior embodiment, is inserted through the cervical opening into the uterus until stop member 92 is engaged with the cervical os. At this point further movement of the instrument into the uterus is prevented. The barrel 90 is then held by the physician with the fore and middle fingers of one hand on either side of the barrel against finger-

piece **95** and with his thumb engaged with thumb rest **106** on plunger **96.** The latter is then moved forward in the barrel by the pressure of the physician's thumb against member **106,** whereby the IUD is moved forward in the device. Simultaneously, auxiliary stop member **100** is moved forward along barrel **90** until it is engaged with the cervical os before the IUD is expelled from the inserter. The device is so constructed that at this point the IUD is in the uterus at the desired location but is still within the insertion end **104** of barrel **90.** Thereafter, continued pressure on plunger **96** and fingerpiece **106** causes barrel **90** to move rearward with respect to the plunger under the force of the physician's fingers on fingerpiece **95.** Thus stop member **92** is moved away from the cervical os while auxiliary stop member **100** remains engaged therewith. As such movement is continued, insertion end **104** is eventually withdrawn from the uterus through the cervical opening; however, the IUD is held in its relative position within the uterus by plunger **96.** As the insertion end is withdrawn from about the IUD, the latter expands into its open configuration at the desired predetermined location in the uterine cavity.

It is noted that stop member **92** is provided with groove **107** therein to accommodate arm **98** as barrel **90** is withdrawn passed the arm. The forward end of slot **94** ends at a predetermined distance from end **108** of insertion end **104** and provides stop **110** against which arm **98** engages so that the physician is provided with an indication, by the feel of the device, as to when the IUD insertion procedure is completed.

While each of the above embodiments of the invention has been described as being particularly adapted to insert an IUD having transverse arms each connected with each other at one end thereof, it is contemplated that other IUD's may also be utilized with the present invention. In particular, it is foreseen that other IUD's, e.g. those having a "T" configuration, may be folded by the crossbar provided in each of the above embodiments, or alternatively, that the IUD's may be manually folded and inserted within the bores of the barrel and the crossbar **54** eliminated. In such cases, the advantageous benefits of the removably mounted stop means and the construction and the use of an auxiliary abutment member as in the second embodiment described above, would be maintained.

It is thus seen, that instruments for inserting IUD's of many shapes have been provided, which instruments are convenient to use and in addition are both economical in construction and readily disposable.

Although illustrative embodiments of the present invention have been described herein with reference to the accompanying drawings, it is to be understood that the invention is not limited to those precise embodiments and that various changes and modifications may be effected therein by one skilled in the art without departing from the scope or spirit of this invention.

What is claimed is:

1. An instrument for the insertion into the uterus of a flexible contraceptive device including a first transverse arm and a second arm coplanar with said first arm and dependent therefrom, said insertion instrument comprising a tubular barrel having an insertion end, stop means on said barrel for engaging the cervical os, said stop means being located at a distance from the anterior end of said insertion end corresponding to a predetermined depth of insertion of said insertion end in the uterus, said barrel having diametrically opposed axially extending apertures therein located posteriorly of said stop means for receiving said intrauterine device with the first arm thereof extending through said apertures transversely of said barrel and said second arm extending from its point of connection with said first arm through one of said apertures and into said barrel with the major portion thereof extending axially within said barrel towards the posterior portion thereof, means on said barrel adjacent said apertures for folding said first arm into said barrel adjacent said second arm and substantially parallel thereto and a plunger telescopically inserted in the posterior portion of said barrel and having a free end operably engageable with said second arm, said plunger being slidable in said barrel to move the folded intrauterine device from its position adjacent said apertures through said barrel insertion end for depositing said device at a predetermined location in the uterus.

2. An instrument as in claim **1** wherein said folding means comprises a crossbar pivotally mounted on said barrel and selectively rotatable from a position transverse to said barrel to a position substantially in axial alignment therewith, said crossbar having first and second depending abutment means thereon located on opposite sides of said barrel, said first abutment means being positioned to engage said first arm adjacent a first end thereof and said second abutment means being positioned to operably engage a second end of said first arm on the barrel side remote from said first end, whereby rotation of said crossbar from said transverse position to said axially aligned position urges said abutment means into engagement with said intrauterine device and folds said first arm into said barrel adjacent said second arm.

3. An instrument as in claim **2** including means for locking said crossbar in said axially aligned position.

4. An instrument as in claim **3** wherein said locking means holds said crossbar in said aligned position against the bias of said first arm and includes a pair of operably engageable protuberances respectively positioned on said barrel and said crossbar.

5. An instrument as in claim **1** wherein said plunger includes a finger-press portion on the end thereof remote from said intrauterine device.

6. An instrument as in claim **1** wherein said plunger is generally cruciform in cross-section.

7. An instrument as in claim **1** including a thumb rest formed on the surface of said barrel adjacent the posterior portion thereof.

8. An instrument as in claim **1** wherein said insertion end of said barrel is curved to generally conform to the curvature of the uterine cavity.

9. An instrument as in claim **8** including a thumb rest formed on the surface of said barrel adjacent the posterior portion thereof, said thumb rest being located on the side of said barrel towards which said insertion end is curved to provide an external indication to the operator of said instrument of the position of said insertion end in the uterus.

10. An instrument as in claim **1** wherein said stop means is removably mounted on said barrel and is positionable adjacent said insertion end at selected distances from the anterior end of said insertion end to selectively vary the depth of insertion of said insertion end in the uterus.

11. An instrument as in claim 1 wherein said barrel has a plurality of recesses therein at varying distances from the anterior end of said insertion end and said stop means is removably mounted on said barrel and includes means for selectively frictionally engaging said recesses to selectively vary the position of said stop means whereby the predetermined depth of insertion of said insertion end in the uterus may be varied.

12. An instrument as in claim 11 wherein said stop means comprises a generally semi-cylindrical member having an abutment surface at one end thereof and said recess engagement means posteriorly located at the other end thereof, said semicylindrical member having an axial length selected to position said abutment means forwardly of the most anterior of said recesses when said engaging means is located in the most posterior of said recesses, whereby surrounding uterine and vaginal tissues are protected.

13. An instrument as in claim 12 wherein said recesses are generally annular and said recess engaging means comprises a generally semi-cylindrical flange.

14. An instrument as in claim 1 wherein said barrel has an elongated axially extending slot along substantially the entire length thereof and said plunger has an auxiliary stop member extending through said slot, said auxiliary stop member being moved into engagement with the cervical os adjacent said stop means as said plunger moves said intrauterine device from adjacent said apertures, whereby further urging of said plunger towards said insertion end causes said barrel and insertion end to move rearwardly with respect to said plunger, thereby freeing said insertion device and depositing it in the uterus.

15. An instrument as in claim 14 including oppositely extending fingerpieces on said barrel adjacent the posterior end thereof.

16. An instrument as in claim 14 wherein said folding means comprises a crossbar pivotally mounted on said barrel and selectively rotatable from a position transverse to said barrel to a position substantially in axial alignment therewith, said crossbar having first and second depending abutment means thereon located on opposite sides of said barrel, said first abutment means being positioned to engage a first end of said first arm and said second abutment means being positioned to operably engage a second end of said first arm on the barrel side thereof remote from said first end, whereby rotation of said crossbar from said transverse position to said axially aligned position urges said abutment means into engagement with said intrauterine device and folds said first arm into said barrel adjacent said second arm.

17. An instrument for the insertion into the uterus of a flexible contraceptive device including a first transverse arm and a second arcuate arm coplanar with said first arm and dependent from one end thereof, said insertion instrument comprising a tubular barrel having an insertion end and diametrically opposed axially extending apertures at an intermediate portion thereof through which said intrauterine device is received in said barrel with the first arm thereof extending through said apertures transversely of said barrel and said second arm extending from its point of connection with said first arm through one of said apertures and into said barrel with the major portion thereof extending axially within said barrel towards the posterior portion thereof, means on said barrel adjacent said apertures for folding said first arm into said barrel adjacent said second arm and substantially parallel thereto, and a plunger telescopically inserted in the posterior portion of said barrel and having a free end operably engageable with said second arm, said plunger being slidable in said barrel to move the folded intrauterine device from its position adjacent said apertures through said barrel insertion end for depositing said device at a predetermined location in the uterus.

18. An instrument as in claim 20 wherein said folding means comprises a crossbar pivotally mounted on said barrel and selectively rotatable from a position transverse to said barrel to a position substantially in axial alignment therewith, said crossbar having first and second depending abutment means thereon located on opposite sides of said barrel, said first abutment means being positioned to engage said second arm adjacent its point of connection with said first arm and said second abutment means being positioned to engage said first arm on the side thereof remote from said second arm, whereby rotation of said crossbar from said transverse position to said axially aligned position urges said abutment means into engagement with said intrauterine device and folds said first arm into said barrel adjacent said second arm.

19. An instrument as in claim 21 wherein said second abutment means have a recess therein accommodating the point of connection of said second arm with said first arm, and an extension portion received in the adjacent aperture when said crossbar is in its axially aligned position, said extension portion having an inclined surface for engaging said point of connection as said intrauterine device is moved away from said apertures by said plunger to guide said point of connection into said barrel.

20. An instrument as in claim 21 including means for locking said crossbar in said axially aligned position.

21. An instrument as in claim 23 wherein said locking means holds said crossbar in said aligned position against the bias of said first arm and includes a pair of operably engageable protuberances respectively positioned on said barrel and said crossbar.

22. An instrument as in claim 20 wherein said plunger is generally cruciform in cross-section.

23. An instrument as in claim 20 wherein said insertion end of said barrel is curved to generally conform to the curvature of the uterine cavity.

24. An instrument as in claim 26 including a thumb rest formed on the surface of said barrel adjacent the posterior portion thereof, said thumb rest being located on the side of said barrel towards which said insertion end is curved to provide an external indication to the operator of said instrument of the position of said insertion end in the uterus.

25. An instrument as in claim 27 wherein said insertion end of said barrel has a smaller outside diameter than the remainder of said barrel.

26. An instrument for the insertion into the uterus of an intrauterine device, which instrument comprises a tubular barrel receiving said intrauterine device and having an insertion end, stop means on said barrel for engaging the cervical os, said stop means having a groove therein and being located at a distance from the anterior end of said insertion end corresponding to a predetermined depth of insertion of said insertion end in the uterus, said barrel having an axially extending slot along substantially the entire length thereof and in

axial alignment with said groove in said stop means, and a plunger slidably and telescopically inserted in the posterior portion of said barrel, said plunger having a free end operably engageable with said intrauterine device and an auxiliary stop member extending through said slot, said auxiliary stop member being located at the anterior end of said plunger and being moved within said slot and groove into engagement with the cervical os as said plunger moves said device toward said insertion end, whereby further urging of said plunger towards said insertion end causes said barrel and insertion end to move rearwardly with respect to said plunger thereby freeing said insertion device and depositing it in the uterus.

27. An instrument as in claim **26** including oppositely extending fingerpieces on said barrel adjacent the posterior end thereof.

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