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M. I. BAKUNIN

3,405,711

INTRAUTERINE CONTRACEPTIVE DEVICE

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2 Sheets-Sheet 1

Fig. 1

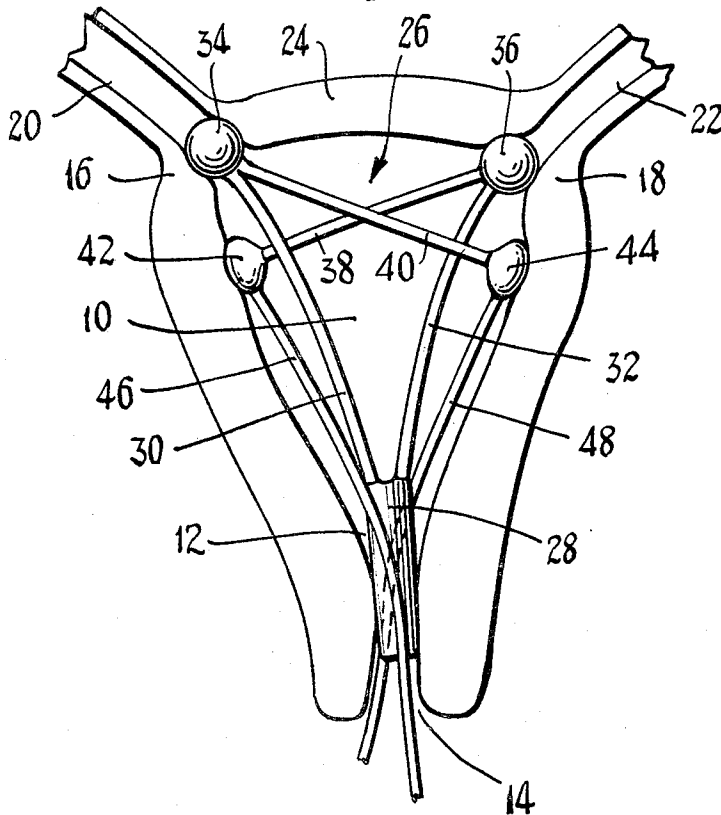
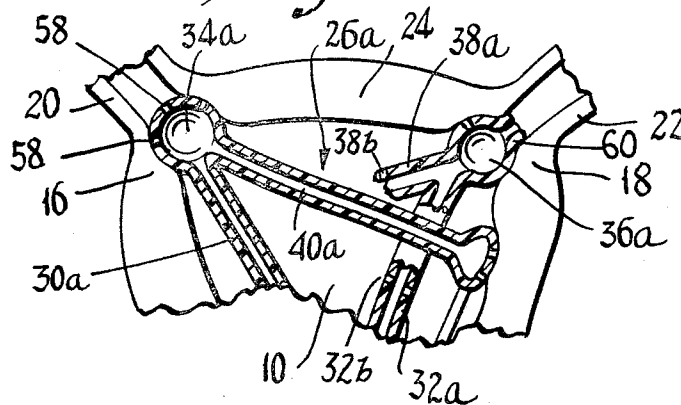


Fig. 3



INVENTOR
Maurice I. Bakunin
BY
H. J. S. S. S.
AGENT

Oct. 15, 1968

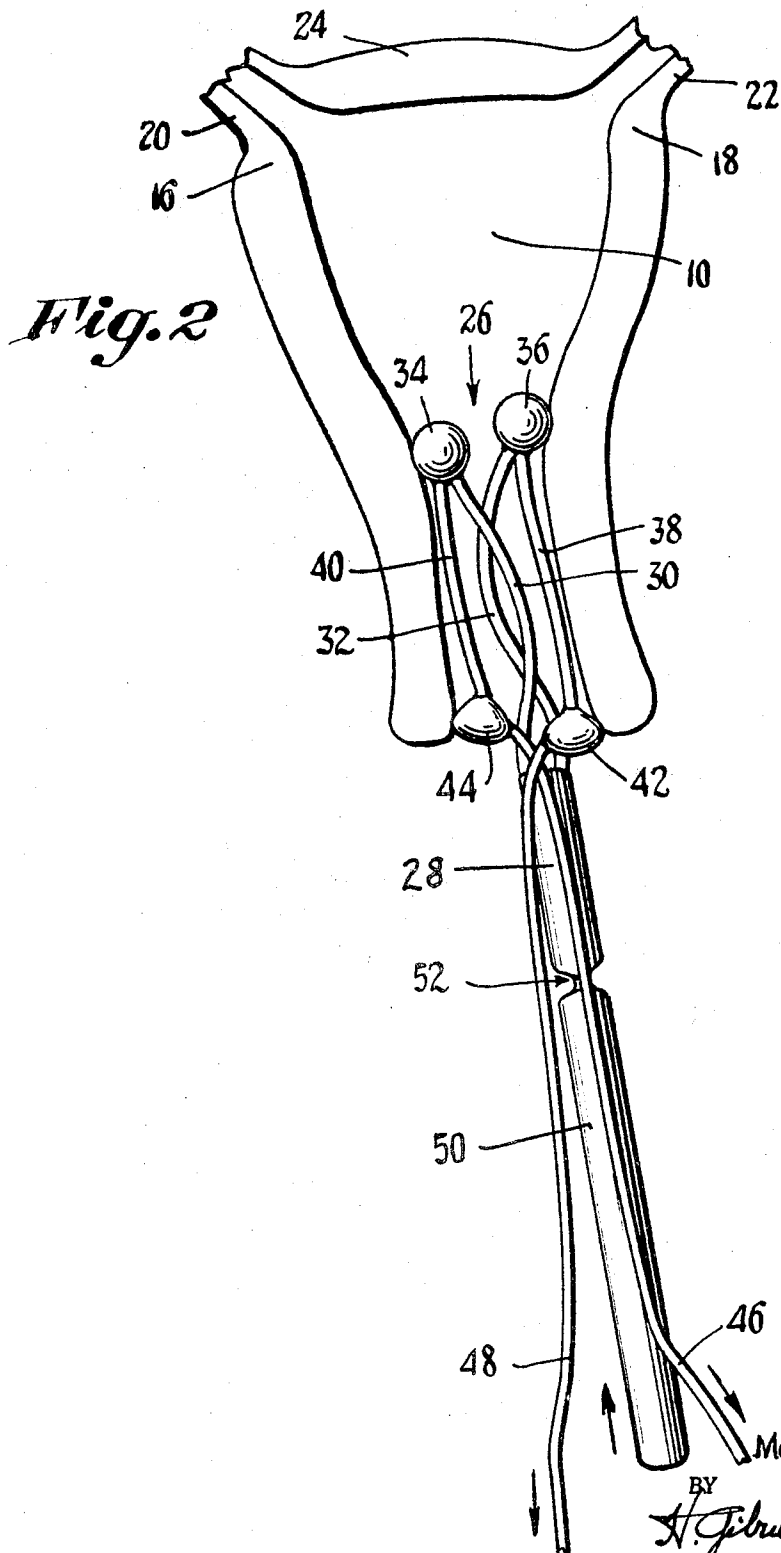
M. I. BAKUNIN

3,405,711

INTRAUTERINE CONTRACEPTIVE DEVICE

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INVENTOR
Maurice I. Bakunin
BY
H. J. Schumann
AGENT

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3,405,711

INTRAUTERINE CONTRACEPTIVE DEVICE

Maurice I. Bakunin, 881 Lafayette St.,

Bridgeport, Conn. 06603

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ABSTRACT OF THE DISCLOSURE

Intrauterine contraceptive device which is roughly V-shaped and comprises a central stem having a pair of slender divergent arms formed with bulbous extremities which are engageable with the Fallopian region of the uterus when the stem is in the os, thereby to position and retain the device in the uterus.

This invention relates to contraceptive devices of the type intended to be retained in the uterus.

Objects of the invention are to provide a novel and improved intrauterine contraceptive device which will be reliably retained in the uterus; a device as thus characterized, which is comfortable and safe to use and which minimizes the likelihood of irritation, chafing and the like; a device as above, which may be easily inserted without requiring special tools or the skills of trained personnel, and also easily removed; a device of the kind outlined, which may serve as a carrier and dispenser for medicaments, therapeutic agents and the like; and a device in accordance with the foregoing which is nevertheless especially simple and economical to manufacture.

Other features and advantages will hereinafter appear. In the drawings:

FIG. 1 is a plan view of the device, disposed in the uterus.

FIG. 2 is a view of the device in collapsed condition, as it is being inserted in the uterus.

FIG. 3 is a fragmentary view of a modified form of contraceptive device as provided by the invention.

Referring to FIGS. 1 and 2, there is illustrated a human uterus or womb 10 having an internal os 12, external os 14 and regions 16, 18, to which Fallopian tubes 20, 22 are respectively joined, adjoining the fundus 24.

Disposed in the uterus 10 is an intrauterine contraceptive device designated generally by the numeral 26, said device comprising a soft, resilient, non-reactive piece which is preferably made of plastic or other suitable resilient material, said piece having in accordance with the present invention a roughly V-shaped portion including a central hollow or tubular stem 28 and a pair of slender divergent arms 30, 32 extending from the stem 28 and having bulbous extremities 34, 36 which are engageable with the Fallopian regions 16, 18 of the uterus. The stem 28 is shown as occupying the mouth or os portions 12, 14 of the uterus.

The V-shaped configuration comprising the stem 28 and arms 30, 32 is especially advantageous in effecting a proper positioning of the device 26 in the uterus, as shown in FIG. 1. For, with the stem 28 at the mouth of the uterus, the arms 30, 32 will extend in the shown divergent directions and the bulbous extremity portions 34, 36 will normally seek the regions 16, 18 and will tend to occupy the mouth areas of the Fallopian tubes 20, 22. This will, in conjunction with the stem 28, effect a predetermined positioning of the V-shaped portion of the plastic piece in the uterus which, positioning will normally be maintained as long as the device is retained.

Further, in accordance with the invention, additional retainer means are provided, including means by which

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the device 26 comprising the V-shaped portion may be actuated to a collapsed position such as is indicated in FIG. 2. The said means comprises a pair of cross arms 38, 40 joined respectively to the said divergent arms 32, 30 at locations adjacent the extremities 36, 34. The cross arms 38, 40 extend transversely of the divergent arms 30, 32 and have enlargements 42, 44 at their free extremities, for engagement with the walls of the uterus. Further, in accordance with the invention, pendent strings or cords 46, 48 are attached respectively to the enlargements 42, 44 at the free extremities of the cross arms 38, 40 to enable the latter to be shifted for the purpose of folding the device to a smaller size. This is illustrated in FIG. 2 wherein arrows indicate a pulling force on the cords 46, 48 forcing the cross arms 38, 40 and also the divergent arms 30, 32 to be folded toward each other so that the device 26 has a more compact configuration.

The plastic piece 26 is preferably made of a yieldable and resilient or flexible plastic substance, such as that known by the trade name "Alathon" or of similar stable and non-reactive plastic formulations including polyethylene, polypropylene and the like; or the piece can be made of non-plastic substances which might be found to be suitable. The cords 46, 48 are preferably of nylon or similar strong plastic.

Further, in accordance with the invention, a handle 50 is provided, connected to the stem 28 by a frangible connector 52, constituting a detachable or separable connection. Thus, as seen in FIG. 2, the device 26 may be arranged by pulling on the cords 46, 48 to occupy a size small enough to facilitate its insertion in the uterus 10.

With the device maintained in the collapsed condition shown in FIG. 2, the user while grasping the handle 50 and the cords 46, 48 can insert the device by careful manipulation into the uterus, this being possible without the necessity for a special tool and without requiring specialized skills. After the insertion to the approximate position illustrated in FIG. 1, the user breaks off the handle 50 and removes it, by a simple twisting movement, this being made possible by virtue of the frangible reduced connector portion 52.

The tendency to opening up or extension of the device to the configuration shown in FIG. 1 wherein the cross arm 38, 40 engage the side walls of the uterus and wherein the extremity 34, 36 become located in the regions 16, 18 respectively of the Fallopian tubes, causes a retention of the device in the uterus, whereby it will not be accidentally expelled.

It is understood by those skilled in the art that the presence of a foreign structure in the uterus has the effect of preventing contraception. The normal peristaltic action of the uterus and Fallopian tubes, and the action of the cilia of the Fallopian tubes results in a suction effect which tends to seat the enlargements 34, 36 in conjunction with the shape of the uterus, in the areas 16, 18 as illustrated in FIG. 1.

A modification of the invention is illustrated in FIG. 3, wherein the contraceptive device 26a has divergent arms 30a, 32a which are hollow or tubular, and wherein the bulbous extremities 34a, 36a are also hollow. The extremity 34a is shown as having openings 58, and the bulbous extremity 36a is shown as having a hollow protuberance 60. The protuberance 60 tends to seek the opening at the Fallopian tube, aiding in the positioning of the device. Further, the cross arms 38a, 40a and the enlargements thereof may also be made hollow as shown. The arms 32a and 38a may have openings 32b and 38b respectively. The hollow arms and the enlargements or bulbous extremities may contain a medicament or other substance intended to be discharged slowly into the uterus or Fallopian tubes. Thus, treatment or other

action may be effected, by means of the hollow device 26a containing the desired treating substances.

It will now be seen from the foregoing that I have provided a simple and effective intrauterine contraceptive device comprising a flexible or resilient plastic piece having a unique configuration by which it is accommodated and retained in the human uterus, and by which portions may be disposed adjacent the opening of the Fallopian tubes. The device is operable to place it in collapsed condition, and may be readily inserted in the uterus by a relatively unskilled person, without the use of special tools. Further, by the provision of the nylon cords, the device at a later time may be readily removed at the will of the user. The likelihood of chafing is minimized by the provision of the bulbous extremities or enlargement, and the soft, yieldable nature of the plastic, and it will be understood that the arms 30, 32, 38 and 40 are of relatively thin cross section and characterized by a great yieldability, whereby there is a minimum of discomfort and tendency to irritation.

With the organization illustrated in FIG. 3, suction action in the Fallopian tubes 20, 22 tends to release or suck out the medication in the device 26a, as will now be understood.

Variations and modifications may be made within the scope of the claims, and portions of the improvement may be used without others.

I claim:

1. An intrauterine contraceptive device comprising a flexible piece having a roughly V-shaped portion including a central stem and a pair of slender divergent arms extending from the stem, said V-shaped portion being adapted to fit in the human uterus with the stem at the inner os, said arms having bulbous extremities engageable with the Fallopian region of the uterus to effect, in conjunction with the stem placement in the os, a predetermined positioning of said V-shaped portion in the uterus, and having cross arms joined respectively to them at locations adjacent the said bulbous extremities, said cross arms extending transversely of the divergent arms and having enlargements at their free extremities for engagement with the walls of the uterus.

2. A device as in claim 1, and including cords attached to the free extremities of the cross arms, to effect a shifting of the same for the purpose of folding the device to a smaller size.

3. A device as in claim 1, wherein the divergent arms and cross arms and the bulbous extremities and enlargements thereof are hollow, said extremities and enlargements having discharge openings to permit the passage of substances disposed within the arms.

4. A device as in claim 1, wherein the divergent arms tend to outline a V-shape, and wherein each one of the cross arms and its associated divergent arm tend to outline a V-shape.

5. An intrauterine contraceptive device comprising a flexible piece having a roughly V-shaped portion including a central stem and a pair of slender divergent arms extending from the stem, said V-shaped portion being adapted to fit in the human uterus with the stem at the inner os, said arms having bulbous extremities engageable with the Fallopian region of the uterus to effect, in conjunction with the stem placement in the os, a predetermined positioning of said V-shaped portion in the uterus, said central stem having an elongate handle and a frangible connector tie detachably joining the handle to said stem.

6. An intrauterine contraceptive device comprising a flexible piece having a roughly V-shaped portion including a central stem and a pair of slender divergent arms extending from the stem, said V-shaped portion being adapted to fit in the human uterus with the stem at the inner os, said arms having bulbous extremities engageable with the Fallopian region of the uterus to effect, in conjunction with the stem placement in the os, a predetermined positioning of said V-shaped portion of the uterus, said arms and bulbous extremities being hollow, said extremities having openings to permit the passage of substances disposed within the arms and extremities.

7. A device as in claim 6, and including a hollow and tubular protuberance on a bulbous extremity, arranged for disposition in the mouth of a Fallopian tube of the uterus.

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ADELE M. EAGER, *Primary Examiner*.