

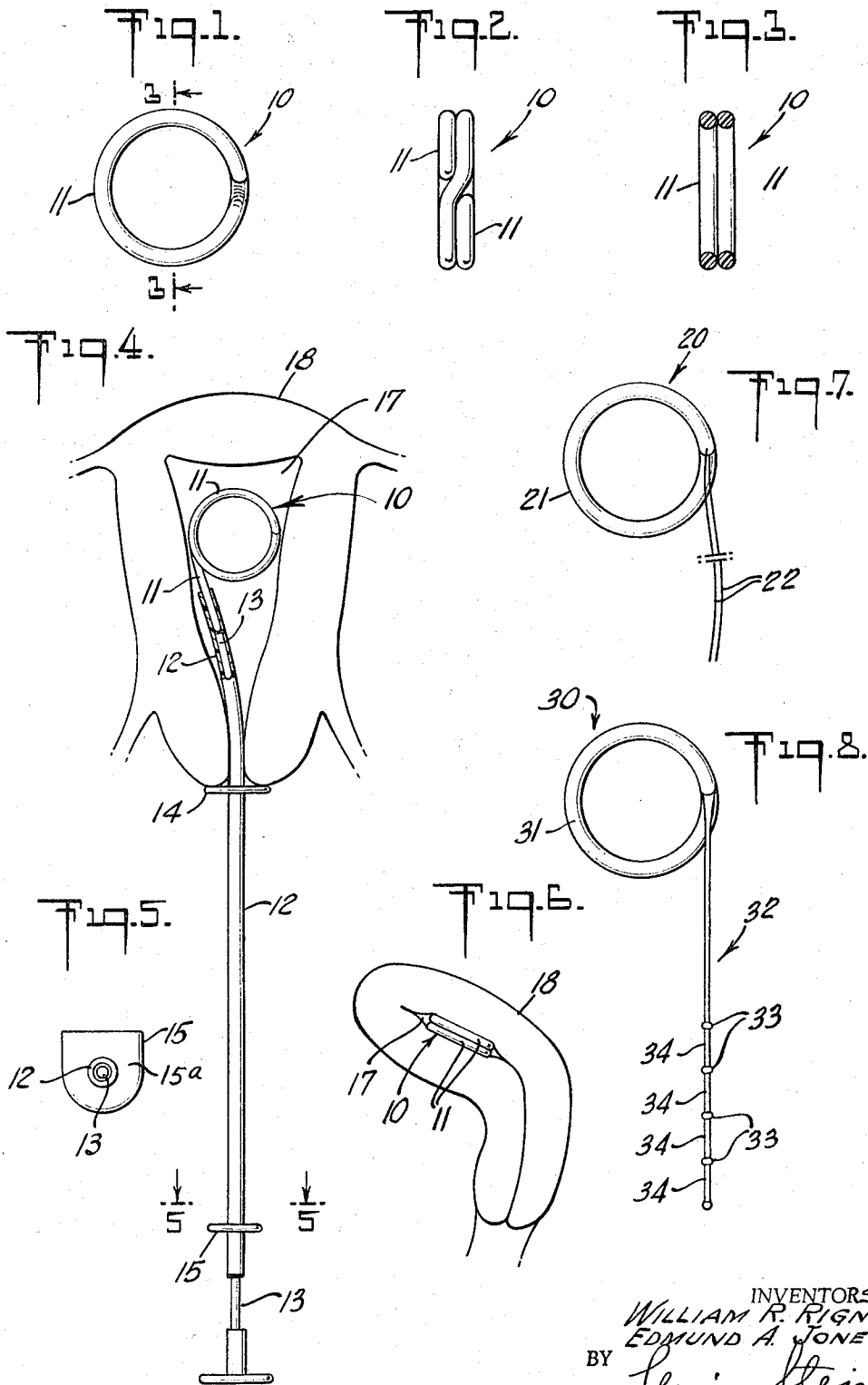
May 14, 1968

W. R. RIGNEY ET AL

3,382,869

INTRAUTERINE CONTRACEPTIVE DEVICE

Filed Feb. 2, 1966



INVENTORS:
WILLIAM R. RIGNEY
EDMUND A. JONES
BY *Lewis Stein*
ATTORNEY

1

3,382,869

INTRAUTERINE CONTRACEPTIVE DEVICE

William R. Rigney, Watchung, and Edmund A. Jones, Somerville, N.J., assignors to Ortho Pharmaceutical Corporation, a corporation of New Jersey

Filed Feb. 2, 1966, Ser. No. 524,427

3 Claims. (Cl. 128-130)

The present invention is directed to new and useful improvements in intrauterine contraceptive devices, and more particularly, to a device which may be inserted into the uterus through an undilated cervix.

In recent years, there has been growing enthusiasm for the use of intrauterine contraception since it is a birth control method which requires a single visit to a doctor for the fitting of the device by which a permanent, reversible means of contraception is accomplished.

In modern times, intrauterine devices received their impetus from the work of Dr. Grafenberg. The Grafenberg ring was a metal ring, usually of silver, which was inserted into the uterus. Due to its rigidity, the Grafenberg ring could only be inserted by dilating the cervix, a technique which required anesthetizing the patient. More recently, modifications of the Grafenberg ring have been used, namely the Ota ring and the Hall-Stone ring. As with the Grafenberg ring, these devices also require the dilation of the cervix.

The first breakthrough in the field of intrauterine contraception occurred when Dr. Lazar Margulies invented an intrauterine contraceptive device which can be inserted through an undilated cervix. This is accomplished by providing a coil-shaped device with two free ends which can be deformed to a straight line for insertion through the undilated cervix. Upon insertion, the device again assumes its coil shape.

Over a period of five years, the data which has been gathered on the use of intrauterine contraceptive devices of all types indicates that in a certain percentage of cases, the free ends of devices which are inserted through the undilated cervix will embed themselves in the endometrial tissue of the uterus, and may actually perforate the uterus.

It is an object of the invention to provide an intrauterine contraceptive device which may be inserted through an undilated cervix.

It is a still further object of the invention to provide an intrauterine contraceptive device which has no free ends when in situ.

Referring now to the drawing in which the preferred embodiments of the invention are illustrated:

FIGURE 1 is a plan view of an intrauterine contraceptive device according to the invention.

FIGURE 2 is a side view of the device of FIGURE 1.

FIGURE 3 is a cross-sectional view of the device of FIGURE 2 through 3-3.

FIGURE 4 is a frontal section through the uterus showing placement of the device of FIGURE 1.

FIGURE 5 is a plan view of a flange.

FIGURE 6 is a cross-sectional view of the uterus showing the device of FIGURE 1 in situ.

FIGURES 7 and 8 are plan views of further modifications of the device of FIGURE 1.

The intrauterine contraceptive device of the present invention 10 is a ring formed from a single strand of flexible material which is wound into the form of a spring having from one to three layers. The ends of the

2

strand 11 are beveled in order to obviate any sharp edges and to permit the ring to lie flat. As may be seen from FIGURE 2, the convolutions of the strand forming the ring 10 are contiguous with one another.

The ring may be formed from any flexible material which will resume its original shape upon the release of pressures which distort its shape. Since the ring is to be inserted into the uterus and may remain there for a number of years, the material from which it is formed should be inert. While many materials are suitable, it is preferred to form the ring from a plastic material such as polyethylene, polypropylene, polyethylene glycol terephthalate, polytetrafluoroethylene or nylon. In order to assist the physician in ascertaining the correct placement of the ring, it is desirable to compound an X-ray opaque material, such as barium sulfate, into the powder from which the ring is molded.

In order to insert the ring, one end 11 is inserted into a canula 12 and the strand from which the ring is formed is then completely threaded into the canula. The diameter of the strand should be such that the canula may be slipped through the cervix 16 without dilating the cervix. The canula is provided with a suitable flange 14 which permits the insertion of the canula sufficiently far into the uterus 18 to assure that the strand upon expulsion from the canula will be placed in the uterine cavity 17 and not in the cervical canal 19. The flange 14 also aids to prevent the perforation of the uterus by the canula. The strand is expelled from the canula 12 into the uterine cavity 17 by pushing plunger 13 through the canula 12. Upon being expelled from the canula 12, the strand re-assumes its shape as a ring 10.

In order to assist the physician in assuring the placement of ring 10 in the proper plane of the uterus, the strand from which the ring is formed may have flat faces as seen in FIG. 3. The canula may be provided with a flange 15 having at least one flat face 15a. The strand is fed into the canula with one of its flat faces parallel to the flat face 15a of the flange 15. The canula 12 is then inserted through cervix 16 with the flat face 15a of flange 15 positioned to permit the expulsion of the strand into the uterine cavity 17 so that ring 10 lies flat in the cavity as in FIG. 6.

FIGS. 7 and 8 illustrate two further embodiments of the invention. Once the ring of FIG. 1 is in place within the uterus, the woman can only assure herself of its presence by periodic visits to her physician for an X-ray examination. To permit tactile, self-examination, one end of the ring may be provided with a tail 22 or 32 which extends through the cervix into the vagina. Tail 22 may be any suitable thread such as nylon thread. The tail 32 may further be provided with beads 33 separated by smooth portions 34 to assist in the tactile sensing of the tail. The use of a tail to assist in self-examination is described in Margulies, U.S. Patent No. 3,200,815.

Tails 22 and 32 have the further advantage of assisting in the removal of the ring.

While the various modifications of the ring illustrated herein are formed from two convolutions of a strand of resilient material, it will be obvious to one skilled in the art, that the ring may be formed from one or more convolutions.

What is claimed is:

1. An intrauterine contraceptive device comprising a ring, said ring being formed from at least one convolution of a single strand of resilient material having beveled

3

ends, said ends overlapping at least a portion of said ring.

2. An intrauterine contraceptive device according to claim 1, wherein said ring is formed from 2 or more convolutions of said strand.

3. An intrauterine contraceptive device according to claim 1, wherein a flexible tail is attached to at least one end of said strand.

4

References Cited

UNITED STATES PATENTS

1,896,071	2/1933	Clark	128—130
3,200,815	8/1965	Margulies	128—130
3,306,286	2/1967	Ahmed	128—130
3,323,520	6/1967	Hall	128—130

ADELE M. EAGER, *Primary Examiner.*