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(71)(72) Applicant and Inventor: PIANETTI, Francesco [IT/IT]; Via Turati, 22, I-20013 Magenta (IT).

(74) Agents: PASSINI, Angelo et al.; Notarbartolo & Gervasi S.r.l., Viale Bianca Maria, 33, I-2012 Milano (IT).

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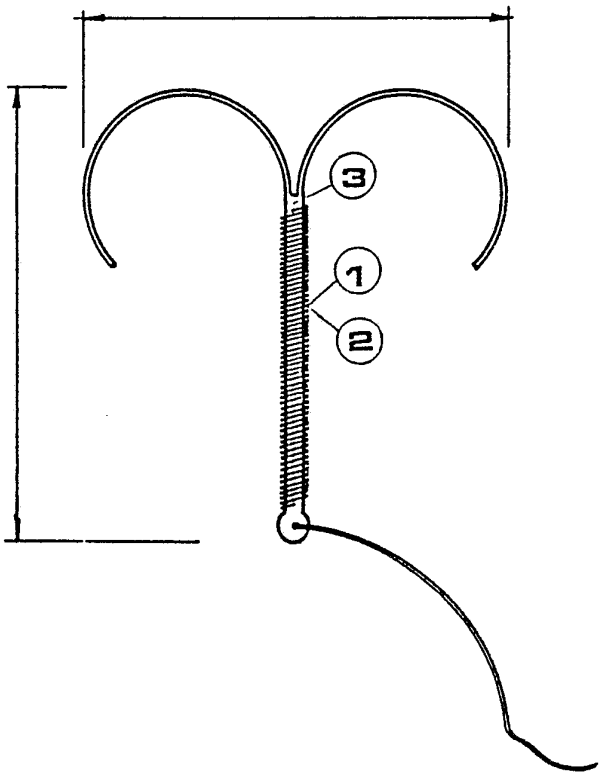
(54) Title: BIMETALLIC SPIRAL INTRAUTERINE DEVICE



(57) Abstract

Intrauterine device comprising a spiral (1, 2) wound on a plastic material support (3), said spiral consisting of a pair of different metals (1, 2) welded together or being in close reciprocal contact and both in contact with the uterine environment.

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BIMETALLIC SPIRAL INTRAUTERINE DEVICE

FIELD OF THE INVENTION

The present invention refers to an intrauterine device consisting of a metallic spiral.

PRIOR ART

Metallic spiral intrauterine devices wound on a plastic material support are known.

Furthermore, studies were published on the contraceptive effect of metals, for istance:

Ullmann G., Hammerstein J.: Inhibition of sperm, mobility in vitro by copper wire; Contraception 6:71, 1972.

Furthermore, devices are also known consisting of rings separatly mounted on plastic material supports, said rings consisting of two different metals. (E. Kesserü, Hurtado, B. Muhe: Copper IUD, Enhancement of its efficacy by addition of silver and nickel; Contraception, February 1974, vol. 9, n. 2). Said devices have been in use for a long time; however, the need was felt of more efficient devices.

SUMMARY

We have now surprisingly found an intrauterine device having a decidedly higher efficency than the ones previously known.

Said device comprises a spiral wound on a plastic material support, and is characterised in that said spiral consists of a pair of different metals in close contact with each other and both in contact with the uterine environment.

DETAILED DESCRIPTION OF THE INVENTION

The characteristics and advantages of the device according to the present invention will now be put in better evidence by the following detailed description, with reference to preferred embodiments of the invention, which are reported only to illustrate the invention without limiting it.

In figures 1 to 4 a first embodiment of the device according to the invention is illustrated, while figures 5 to 7 and 8 to 12 illustrate, respectively, a second and a third embodiment.

Referring to the different figures and to the reference numerals in them, figures 1 and 2 represent cross sections of two metal wires, each consisting of two different metals, respectively 1 and 2, welded together along their length.

As can be seen comparing the two figures, elements (1) and (2), welded together to form the wires, may be prepared in different shapes, according to the desired contact extent.

With one of the wires described a spiral is wound around the plastic material support 3 as represented in the details of fig. 3, and in the complete device represented in fig. 4.

Fig. 5 represents the section of two metal wires 4 and 5 consisting of different metals kept together in strict contact by means of a strand which is applied as a spiral on a plastic material support 3 as indicated in the detail illustrated in fig. 6 and in the complete device shown in fig. 7.

Figures 8, 9 and 10 represent, respectively, in longitudinal and transverse section, a metal wire consisting of alternating segments 6 and 7 of two different metals welded together.

Said metal wire is wound as a spiral around a plastic material support, as shown in the detail of fig. 11 and in the complete device of fig. 12.

The spiral wound wire has in all cases a length of 20-21 cm, while its diameter is of 0.15-0.30 mm.

Different pairs of metals can be employed according to the present invention, provided that they do not exert a damaging action on the uterine structures.

Preferred pairs of metals are:

1- copper-silver

2- copper-iron

3- copper-nickel

4- iron-silver

5- iron-nickel

6- silver-nickel

Particularly preferred is the copper-silver pair.

The device according to the invention exerts a decidely higher contraceptive action with respect to known devices.

Said higher activity may be hypothetically referred to a galvanic effect of the two metals being in strict contact in the uterine environment.

CLAIMS

1. Intrauterine device consisting of a spiral wound on a plastic material support, characterised in that said spiral consists of a pair of different metals being in strict contact one with the other, and both in contact with the uterine environment.

2. A device according to claim 1, characterised in that said metal pair is: copper-silver, copper-iron, copper-nickel, iron-silver, iron-nickel, silver-nickel.

3. A device according to claim 1, characterised in that said spiral consists of a wire comprising two different metals, respectively (1) and (2) welded together along their length.

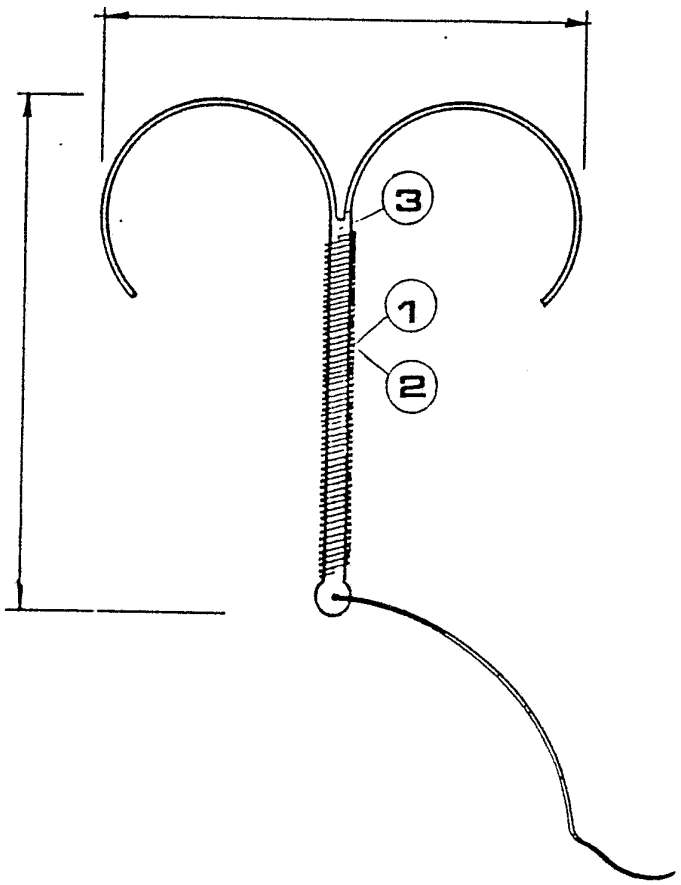
4. A device according to claim 1, characterised in that said spiral comprises two metal wires (4) and (5) consisting of different metals kept together in strict contact by means of a strand.

5. A device according to cliam 1, characterised in that said spiral is formed by a metal wire consisting of alternating segments (6) and (7) of two different metals joined by welding.

6. A device according to claims 1 to 5, characterised in that

said metal wires constituting said spiral have a length of 20 to 21 cm and a diameter of 0.15 to 0.30 mm.

FIG. 4



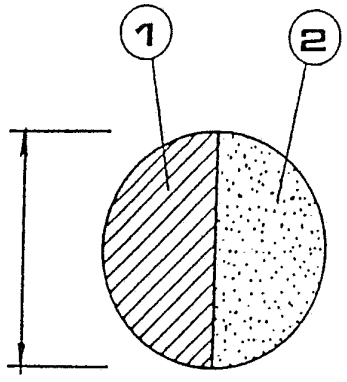


FIG.1

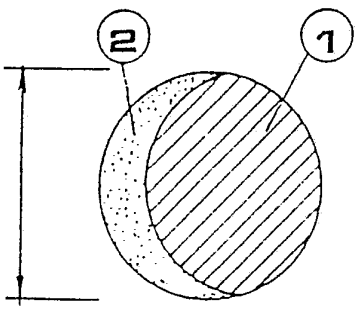


FIG.2

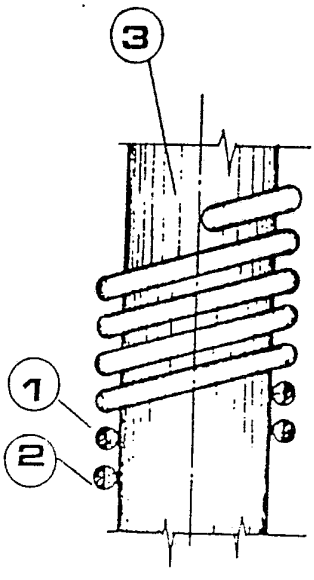
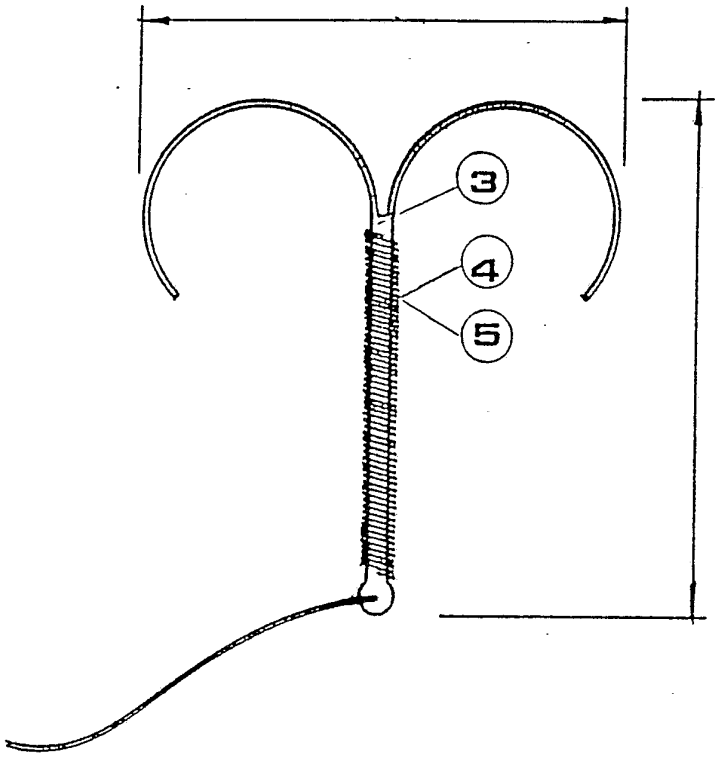


FIG.3

FIG. 7



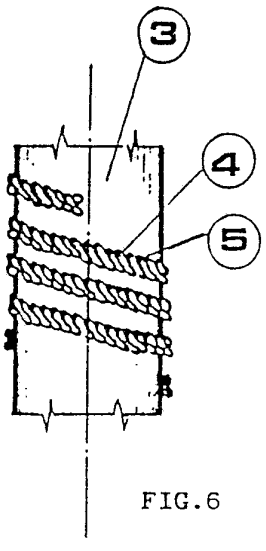


FIG.6

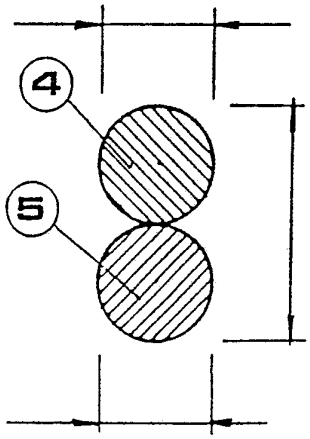


FIG.5

FIG. 9

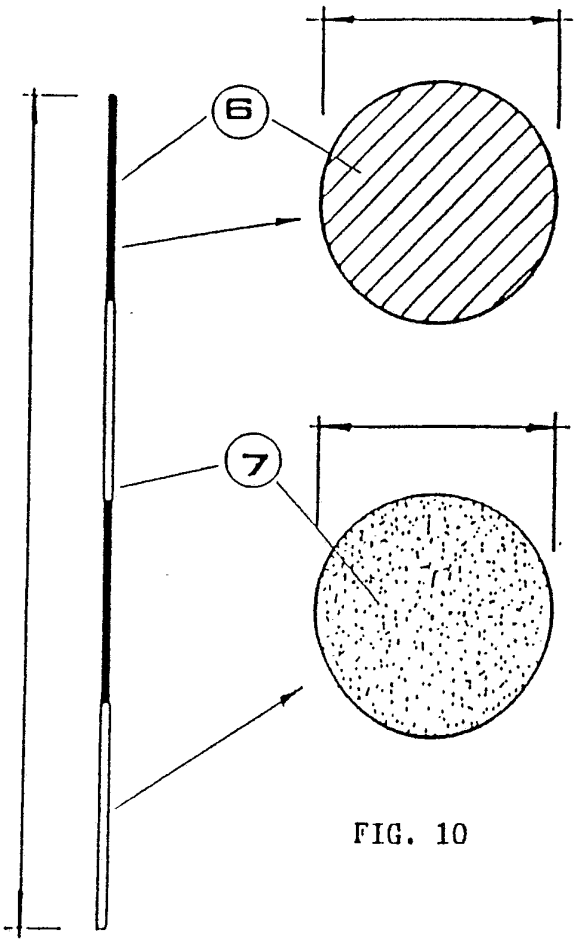
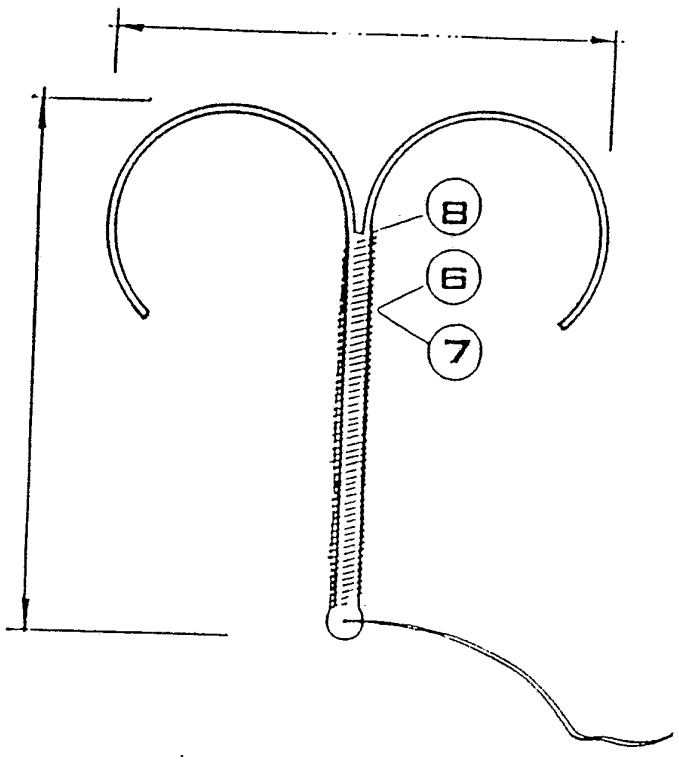


FIG. 10

FIG. 8

FIG. 12



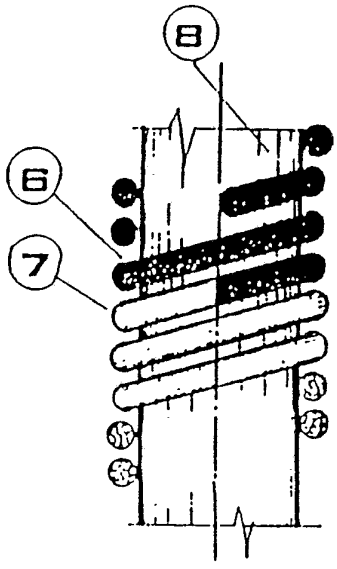


FIG.11

INTERNATIONAL SEARCH REPORT

International Application No PCT/EP 89/01060

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 A61F6/14

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl. 5	A61F

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category °	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
X	US,A,3563235 (ZIPPER) 16 February 1971 see abstract see column 1, lines 65 - 75 see column 2, lines 14 - 26 see column 4, lines 9 - 11	1, 2, 4
A	---	3, 5, 6
A	EP,A,0191957 (AKZO) 27 August 1986 see page 6, lines 1 - 4	1-4
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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
17 JANUARY 1990	14 FEB 1990
International Searching Authority	**Signature of Authorized Officer**
EUROPEAN PATENT OFFICE	L. ROSSI

Form PCT/ISA/210 (second sheet) (January 1985)

ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO.

PCT/EP 89/01060
SA 30895

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on
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		CA-A-	1241885	13-09-88
		JP-A-	61191358	26-08-86
		US-A-	4690136	01-09-87
DE-A-2207939	30-08-72	None		