

June 6, 1967

H. H. HALL

3,323,520

INTRAUTERINE PESSARY

Original Filed Oct. 5, 1964

2 Sheets-Sheet 1

FIG. 1

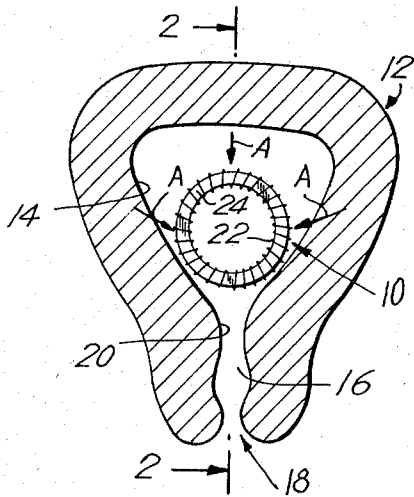


FIG. 2

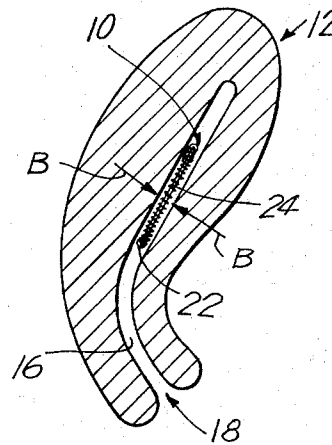


FIG. 3

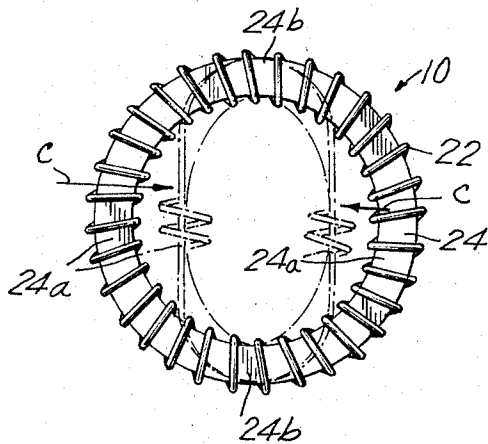


FIG. 4

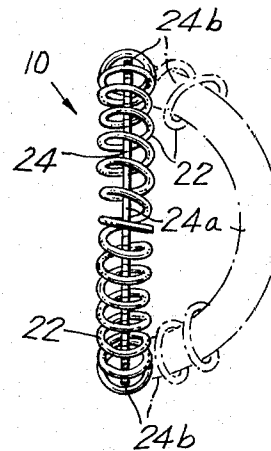
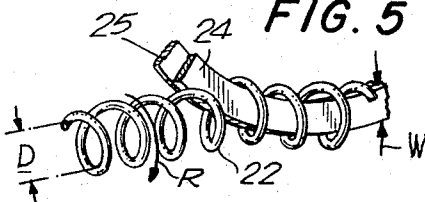


FIG. 5



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2 Sheets-Sheet 2

FIG. 6

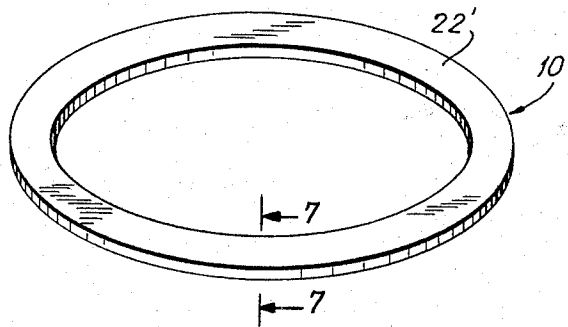


FIG. 7

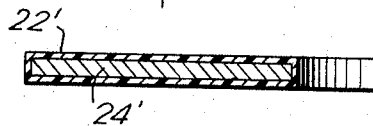


FIG. 8

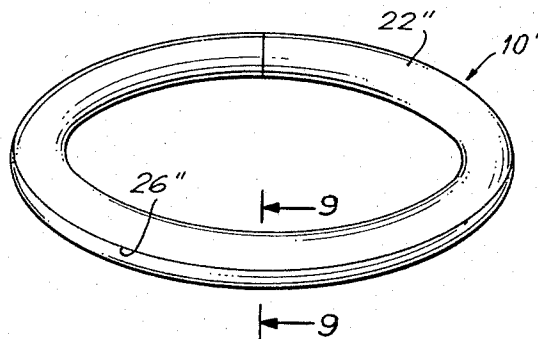
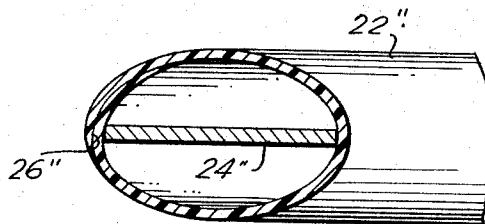


FIG. 9



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1

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INTRAUTERINE PESSARY

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Continuation of abandoned application Ser. No. 401,506,
Oct. 5, 1964. This application Apr. 13, 1965, Ser. No.
449,384

6 Claims. (Cl. 128—130)

This application is a continuation of application Ser. No. 401,506, filed Oct. 5, 1964, now abandoned, entitled, Intrauterine Pessary. The present invention relates generally to an improved intrauterine pessary, and more particularly to improvements for this medical device which greatly increase its contraceptive effectiveness.

The use of an intrauterine pessary is generally recognized as an effective contraceptive device. In the evolution to this specific use, a variety of inert materials have been experimented with, and the basic shape of the pessary has also undergone many changes to increase its effectiveness. Whereas there are numerous materials available to obviate irritation and other difficulties attributable to the material of construction of the pessary, the basic problem for which it has on numerous occasions undergone numerous changes in shape still remains unsolved. In this connection, the construction of a pessary must be such as to facilitate introduction through the cervical canal and into the uterine cavity; but once positioned therein, it is primarily the shape of the pessary which is relied upon to prevent expulsion upon involuntary contraction of the uterus.

An object of the present invention is to provide an intrauterine pessary with which there is no difficulty encountered in the positioning of the same in the uterine cavity, and which is also uniquely adapted to obviate its own involuntary expulsion.

Another object is to provide an intrauterine pessary which has a simple shape and construction permitting manufacture by mass production techniques, and which further can consistently be produced to size, shape and other specifications and standards.

Still another object is to provide an intrauterine pessary which, although having a simple and easy-to-produce shape and construction, is uniquely adapted when collapsed in one plane to increase its dimension to a corresponding degree in another plane, with the net result that once positioned in the uterine cavity, the pessary herein exhibits a capacity to stay in its position within the uterine cavity and resist expulsion.

It is also an object of the present invention to provide a construction for the intrauterine pessary which can be easily modified to provide any desired degree of rigidity or resistance to deformation, the more rigid pessaries having a greater resistance to ejection and being used whenever possible for patients having a greater tendency to expel the pessary.

One preferred embodiment of an intrauterine pessary according to the present invention includes an endless, helical spring, generally circular in both overall shape and cross section, and comprised of a suitable inert material such as stainless steel. Disposed as a core within the spring, is one or several flat-bodied rings or members, each of which is preferably about two mils thick and similarly comprised of an inert material such as stainless steel. The rigidity of the pessary is a function of the number of these rings or members that is used. In yielding to an opposing compressing force, which for illustration let it be assumed is exerted in a horizontal plane, each opposite segment of the flat-bodied member of the pessary against which this force is actually applied

2

is turned face-to-face. Being turned in this manner, the intermediate opposite segments are projected out of the horizontal plane, and the pessary in the vertical plane is provided with a generally semicircular shape.

As is generally understood, the functioning of the uterus, as it relates to and is pertinent to the use of pessaries, is such that it is subject to involuntary contractions, which may have the result of expelling the pessary from its position within the uterine cavity. Each contraction, as is further generally understood, acts simultaneously in all directions on the pessary, so that the functioning of the pessary herein, as described above wherein a deformation in one plane produces a corresponding increase in dimension in a perpendicular plane, will be appreciated as having the net effect of maintaining the pessary in its original circular shape in its position within the uterine cavity. In other words, the uterus forces acting in the vertical plane oppose the increase in dimension of the pessary in this plane and thus, in effect, these forces also oppose the horizontal uterus forces acting to expel the pessary.

In further embodiments of an intrauterine pessary demonstrating features of the present invention there is continued use of a core in the form of one or more flat-bodied rings, but the specific form of the outer jacket or covering for said core is subject to wide modification. That is, the helical spring surrounding said core is replaceable by any one of a number of means which can appropriately function to protect the user of the pessary from the sharp edges which are unavoidably sometimes presented along the periphery of said core. Exemplary of one such protective means is a plastic coating which may be applied by dipping, spraying, etc., the core. Exemplary of still another protective means is a plastic member, which like the helical spring, is fitted about the core.

The above brief description, as well as further objects, features and advantages of the present invention, will be more fully appreciated by reference to the following detailed description of presently preferred, but nonetheless illustrative, embodiments in accordance with the present invention, when taken in conjunction with the accompanying drawings, wherein:

FIG. 1 is a diagrammatic plan view of the uterine cavity having in position therein a first embodiment of a pessary demonstrating features of the present invention;

FIG. 2 is an elevational view, in section taken on line 2—2 of FIG. 1, again illustrating the assumed position of the pessary and also the cervical canal through which introduction and extraction of the pessary takes place;

FIG. 3 is an isolated plan view, on an enlarged scale, of the pessary, in which there is further depicted in phantom perspective the shape into which said pessary is distorted when subjected to a compressive force;

FIG. 4 is an elevational view projected from FIG. 3, illustrating in further detail by phantom perspective the characteristic semicircular distorted shape of the pessary when the pessary is deformed or compressed;

FIG. 5 is a fragmentary perspective view, on an enlarged scale, of the pessary at an early stage of assembly of the parts comprising the same;

FIG. 6 is a perspective view of a second embodiment of a pessary demonstrating features of the present invention;

FIG. 7 is a fragmentary elevational view, in section taken on line 7—7 of FIG. 6;

FIG. 8 is a perspective view of still another and third illustrated embodiment of a pessary demonstrating features of the present invention; and

FIG. 9 is a fragmentary elevational view, on an enlarged scale and in section taken on lines 9—9 of FIG. 8.

Having reference first to FIGS. 1 and 2, there is diagrammatically shown therein the anatomical region or environment for an intrauterine pessary, as well as a first preferred embodiment of such a pessary according to the present invention and which is herein generally designated 10. More particularly, reference numeral 12 generally designates the uterus, 14 the uterine cavity, and 16 the cervical canal. The cervical canal 16, as is clearly illustrated, extends between the vaginal vault 18 and the uterine cavity 14 and has its narrowest dimension at the internal os or opening 20 into the uterine cavity 14. In these figures, the pessary 10 is shown in position within the uterine cavity 14, and in this position is generally known to be an effective contraceptive. In this connection, it is generally believed that this is attributable merely to the presence of the pessary 10 within the uterine cavity 14, which it is further believed discourages implantation of the ovum.

The above explanation notwithstanding, clinical testing of pessaries, such as the pessary 10 herein, adequately demonstrates and supports its effectiveness and utility as a contraceptive. Moreover, as it is generally understood in connection with pessaries in general, and also in connection with the pessary 10, the introduction and removal of the pessary 10, as well as the use thereof when under the supervision of a competent gynecologist, calls for the exercise only of conventional techniques, procedures, and the use of conventional instruments, all of which are sufficiently well known as to require no further description or explanation herein. For present purposes, it is necessary only to note that the effectiveness of the pessary 10 is closely related to its ability, once introduced and positioned within the uterine cavity 14, to resist being expelled by contractions of the uterus 12. Pessary 10, however, cannot be constructed solely to obviate expulsion. The construction of pessary 10 must also be consistent with its introduction into the uterine cavity 14 through the narrow confines of the opening 20 thereto; although by having the patient in the lithotomy position and also by employing other conventional techniques and procedures, the introduction of the pessary 10 can be and is greatly facilitated.

As best shown in FIGS. 3-5, to which reference is now made, there is illustrated a construction for the pessary 10 which is consistent both with the passage of the same through the cervical canal 16 and internal os or opening 20 into the uterine cavity 14, and also the need to substantially obviate involuntary expulsion of the pessary 10 from the uterine cavity 14. Pessary 10 includes an ordinary endless helical spring 22, circular in both overall shape and cross section, and preferably comprising of an inert stainless steel. Other inert materials such as glass, silver, rubber-covered steel, and plastic may also be used, the only limitation being that the material not produce irritation or other undesirable side effects. Disposed within the spring 22, as a core, is a flat-bodied circular ring or member 24, the width W of which approximates or is slightly smaller in dimension than the diameter D of the individual coils of the spring 22. In practice, member 24 in a thickness of two mils has been found to be effective, and like the spring 22 is best comprised of an inert stainless steel. As illustrated in FIG. 5, the assembly of the spring 22 and member 24 may be accomplished by threading the spring 22, as by rotation in the direction of the arrow R, about the member 24. Additionally, shown in FIG. 5 is an identical second member 25, illustrating that use may be made of plural flat-bodied members as a core for the spring 22 to regulate the rigidity of the pessary 10, or its resistance to deformation or distortion from its usual circular shape.

In its position within the uterine cavity 14, the pessary 10 is vulnerable to involuntary expulsion by virtue of contraction of the muscles of the uterus 12. As is generally understood, these muscles (not shown) function by contracting in all directions simultaneously. Thus, pessary

10 in its operative position as illustrated in FIGS. 1, 2 on contraction of the uterus 12, would be subjected not only to such forces as are denoted in FIG. 1 by the reference arrows designated A, which have a direct tendency to expel the same, but also simultaneously therewith the pessary 10 is subjected also to forces acting in other directions as well. For example, contraction of the uterus 12 exerts opposing forces B acting, as illustrated in FIG. 2, at 90° to the plane of the forces A.

As is shown in FIGS. 3 and 4, the pessary 10 yields to forces exerted against it in one plane by being simultaneously distorted or projected into a shape having a dimension in a plane perpendicular to these compressive forces. More particularly, a compressive force C exerted in the horizontal plane of FIG. 3 distorts the pessary 10 generally into an ovoid shape in this plane and also into a semicircular shape in the vertical plane of FIG. 4. This is because the opposite segments 24a of the ring or member 24 in yielding to the compressive horizontal forces C are turned face-to-face and project the intermediate opposite segments 24b out of the horizontal plane and provide a generally semicircular shape to the pessary 10 in the vertical plane.

Functioning in this manner, it should be readily appreciated that the construction of the pessary 10, as herein described, is uniquely adapted to obviate the tendency of involuntary expulsion. When subjected to expelling forces A, the tendency of the pessary 10 to distort into a semicircular shape increasing its dimensional height in a perpendicular plane is opposed by the forces B. The net result is that the pessary 10 retains its circular shape which prevents passage out of the uterine cavity 14 through the internal os or opening 20.

In further embodiments of the just described pessary, in which the same but primed (or double-primed) reference numbers are used, the essential functioning thereof is provided by retaining the character and structural features of the core, but as may readily be appreciated there is wide range of substitution possible for the core covering in the specific form of a spring 22. More particularly, in the case of the pessary embodiment 10' of FIGS. 7, 8, an external coating 22' of an appropriate inert plastic is provided the flat-bodied ring or member 24', said coating 22' being applied in any conventional manner as by dipping, coating, etc. Moreover, although the coating 22' is illustrated as completely enclosing the member 24', it may also be restricted to certain areas, as for example the area along the peripheral edge of the member 24', while still functioning effectively according to the present invention. The required functioning of the coating 22' is to protect the user of the pessary 10' from irritation which may be caused by the edges on the member 24', particularly along the outer periphery thereof.

In the pessary embodiment 10'' of FIGS. 8, 9, the core member 24'' is enclosed in a separately fabricated plastic article of manufacture 22'', wherein access to the interior of said article is achieved through an opening 26'' between overlapping ends of said article.

A latitude of modification, change and substitution is intended in the foregoing disclosure and in some instances some features of the invention will be employed without a corresponding use of other features. Accordingly, it is appropriate that the appended claims be construed broadly and in a manner consistent with the spirit and scope of the invention.

What is claimed is:

1. An intrauterine pessary comprising an endless helical spring, generally circular in cross section, and a plurality of flat-bodied circular members, stacked one upon the other, and each approximating in dimension the diameter of said spring, disposed as a core within said spring and effective to promote distortion of said pessary

5

into a semicircular shape upon the application of compressive forces against the pessary.

2. An intrauterine pessary comprising an endless helical spring, generally circular in cross section, and a flat-bodied generally circular member approximating in dimension the diameter of said spring disposed as a core within said spring and effective to promote distortion of said pessary into a semicircular shape upon the application of compressive forces against the pessary.

3. An intrauterine pessary comprising a member having a generally circular shape and a generally flat configuration in one plane effective to promote distortion of said member into a semicircular shape in a transverse plane upon the application of compressive forces against the pessary, said member having an inner and an outer peripheral edge therealong and means disposed as a protective covering along at least said outer peripheral edge to minimize contact of the user of said pessary with said outer peripheral edge.

4. An intrauterine pessary formed as an endless member comprising a body of a predetermined thickness having an outer peripheral edge thereon and an inner peripheral edge bounding a central opening in said body, said peripheral edges bounding therebetween a surface on opposite sides of the body which is of a greater extent than said predetermined thickness of said body, whereby

6

said body in response to compressive forces applied against said outer peripheral edge thereof is distorted into a shape wherein opposing portions of one said surface thereof are turned into facing relationship with each other.

5. An intrauterine pessary as defined in claim 4 including an endless helical spring and wherein said endless member is disposed as a core within said spring.

6. An intrauterine pessary as defined in claim 4 including a protective covering along said outer peripheral edge of said endless member to minimize contact of the user of said pessary with said outer peripheral edge.

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