

April 27, 1954

W. J. HEUBOSKI ET AL

2,676,589

FOLDED PESSARY

Filed Dec. 8, 1949

2 Sheets-Sheet 1

FIG. 1

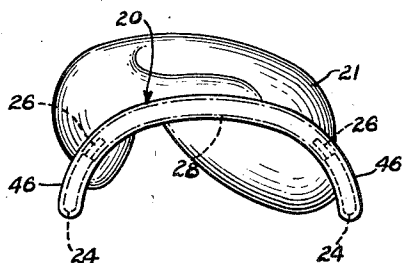


FIG. 2

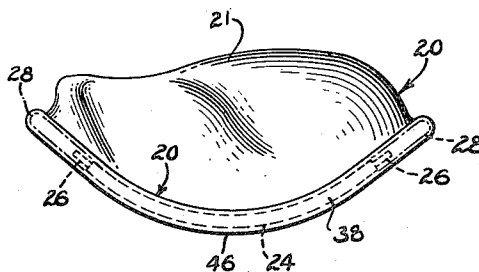


FIG. 5

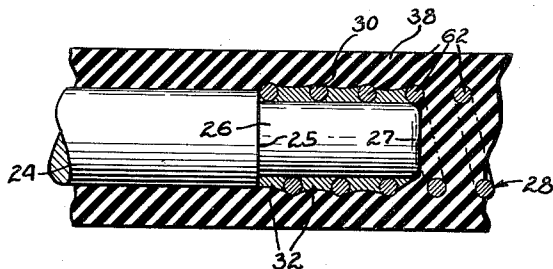
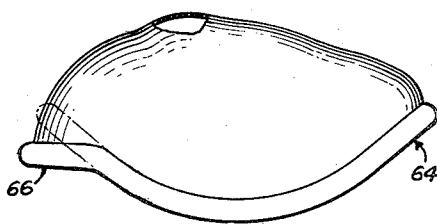


FIG. 9



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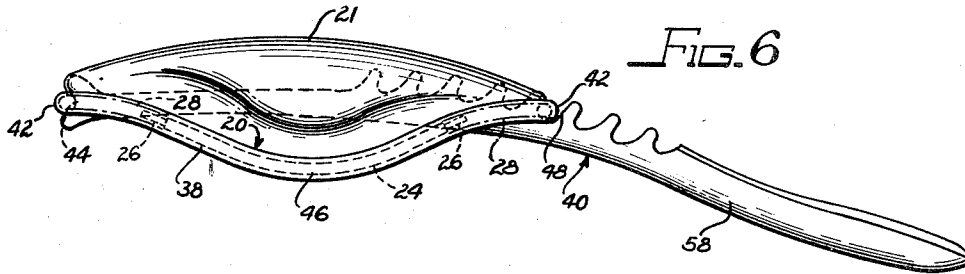
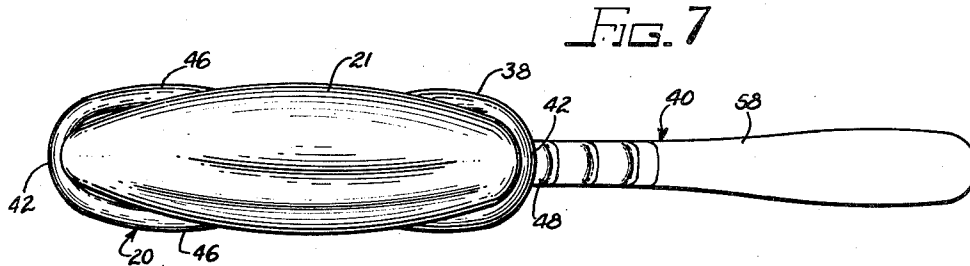
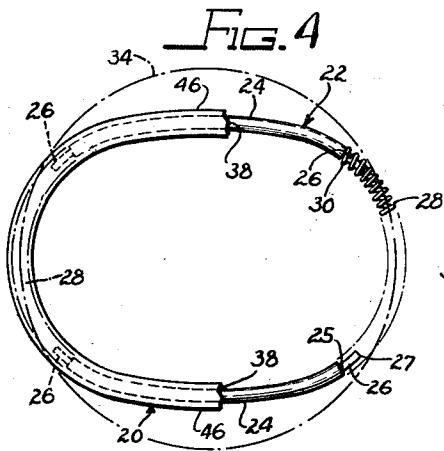
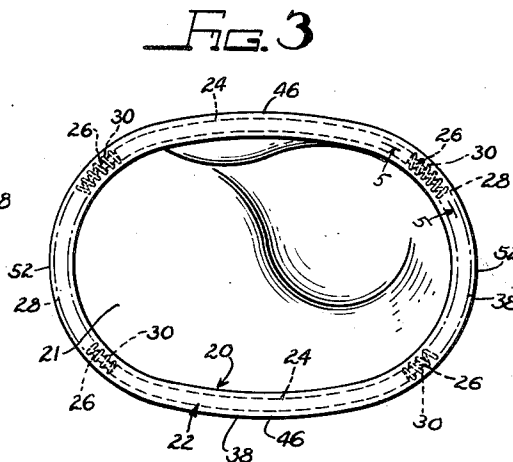
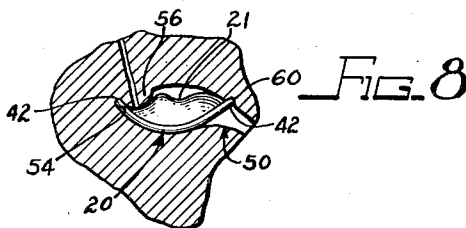
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE

2,676,589

FOLDED PESSARY

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Application December 8, 1949, Serial No. 131,798

13 Claims. (Cl. 128—127)

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This invention relates to pessaries, more particularly those of the diaphragm and ring types, and relates to the subject matter of our co-pending application Serial No. 14,916, filed March 15, 1948, entitled "Pessary."

The conventional ring and diaphragm pessary includes a more or less resilient planar circular rim and is designed for positioning in a vagina of healthy muscular tone. In a vagina of unhealthy muscular tone, i. e., where there is a cystocele or relaxed vaginal walls, the use of the conventional ring or diaphragm pessary is inadvisable, due to the weakness of the muscles at the pubic notch and the consequent inability of those muscles to retain the anterior portion of the pessary rim in or prevent accidental escape of said rim portion from the pubic notch.

It is an object of the present invention to provide a pessary of the ring or diaphragm type which can be lodged in and will not become accidentally dislodged or released from the pubic notch notwithstanding the presence of cystocele or relaxed vaginal walls.

Another feature of the invention concerns the provision of a novel method of making a folded pessary core and pessary.

Further objects and advantages of the invention will appear as the description proceeds.

The invention will be better understood upon reference to the following description and accompanying drawings, in which:

Fig. 1 is an end elevational view of a pessary constructed in accordance with the invention.

Fig. 2 is a side elevational view of the same.

Fig. 3 is a plan view of the same.

Fig. 4 is a plan view of the rim of the same, partly broken away to reveal details.

Fig. 5 is an enlarged fragmentary sectional view taken as indicated by the line 5—5 in Fig. 3.

Fig. 6 is a side elevational view showing a pessary constructed in accordance with one form of our invention mounted on a pessary inserter.

Fig. 7 is a top plan view of the same.

Fig. 8 is a fragmentary sectional view showing the pessary in proper operative position.

Fig. 9 is a side elevational view showing the pessary altered in shape to facilitate proper positioning of the pessary in a vagina in which it might be somewhat difficult to properly position a pessary such as those shown in the other figures.

Referring now more particularly to the drawings, there is shown generally at 20 a pessary ring or rim which may be used by itself (Fig. 4) or may be molded with a membrane or diaphragm 21,

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constructed in accordance with our invention. In making the core 22 of the rim 20, we employ four segments, two opposite segments 24 being arcuate and formed of rigid, preferably manually unipliable metal such as steel or other suitable rod stock and having shoulders 25 and reduced terminals 26 preferably about $\frac{1}{4}$ " long whose free ends may be rounded or tapered, as indicated at 27, to facilitate their insertion into the other two opposite segments 28, which are initially straight and formed of coil spring wire such as piano wire. The terminals 26 are telescoped, preferably with a tight friction fit, in the ends 30 of the springs 28, preferably to the extent determined by the shoulders 25, causing each spring to assume an arcuate shape, the assembly being substantially in the shape of a circle while solder 32, cement or other suitable bonding material is applied to the spring ends and associated rod ends to substantially integrally join them and thus form a unitary ring, indicated diagrammatically at 34, whose axis is planar. A latex sheath 38 is then molded to this ring, and at the same time a membrane 21 also may be molded integral with the sheath.

The pessary rim comprising the connected rod and spring segments and the sheath at this stage is planar as has been stated. It is then flexed into folded condition about a line which substantially bisects the spring segments until a permanent set is imparted to the centers of the spring segments, to the end that the spring segments assume a natural arcuate shape, as projected in Figs. 1, 3 and 4, the rod segments 24 being caused to lie and to be yieldably held by the springs in different planes, so that the rim 20 as a whole, when free, may conveniently be described as roughly resembling rocking chair feet spanned at their respective ends by the arcuate spring segments.

The resulting pessary may readily be applied to an inserter 40 by hooking one of the ends 42 (which include the springs 28) of the rim 20 in the end notch 44 of the inserter and, with the sides 46 (which include the rods 24) straddling the inserter, pulling on the other end 42 of the rim and slipping said other end into an appropriate notch 48 of the inserter, the resilience of the ends 42 maintaining the pessary on the inserter against accidental displacement, and the pessary being held in distended condition, as shown in Figs. 6 and 7. The inserter is then introduced into the vagina 50 whose walls force the sides 46 of the pessary to approach each other somewhat against the resistance of the spring

rim ends 42, until the posterior end 42 of the pessary is lodged in the cul-de-sac 54 behind the cervix 56. The anterior end 42 of the pessary is then slipped free of the inserter 40 by the thumb or finger of the user or by twisting the handle portion 58 of the inserter, whereupon the pessary tends to assume its free or unstressed shape, the anterior end of the pessary moving upward into, or into proximity to, the pubic notch 60. The finger is then inserted and the pessary adjusted if necessary to make sure that the anterior end 42 of the pessary is seated in the pubic notch 60, and then the pessary is in proper position.

The coils 62 of the springs 28 are mutually spaced, and are of such material as to be bendable by the physician manually or by means of a tool to another shape (which it assumes when free or unstressed), an example of which is shown at 64 (Fig. 9), to facilitate passage of the spring end 66 so treated past the cervix 56 into the cul-de-sac 54.

The folded pessary as above-described and illustrated on the drawings has, by reason of its arched shape, an inherent strength and resistance to flattening out, so that, when one spring end is disposed in the cul-de-sac 54, the other spring end fits naturally into the pubic notch and will not accidentally become loosened therefrom notwithstanding weakness of muscular tone of the vaginal walls such as an unduly relaxed condition thereof or cystocele.

Ring and diaphragm pessaries generally range in size in steps of 5 millimeters from 55 to 95 millimeters' rim axis diameter, the corresponding dimension for the folded pessary being measured along the fold line. Satisfactory results with the pessary of our present invention may be obtained by using rods varying in over all arcuate length from $1\frac{1}{2}$ " for the 55 millimeter pessary to $3\frac{1}{2}$ " for the 95 millimeter pessary, varying progressively $\frac{1}{4}$ " for each change of 5 millimeters in pessary size. In such pessaries, the angle subtended by each rod varies from about 85° for the $1\frac{1}{2}$ " rod (55 millimeter pessary) to about 105° for the $3\frac{1}{2}$ " rod (95 millimeter pessary), and of course the angle subtended by the effective (resilient) portion of each spring (i. e., the portion between the ends of the rods to which such spring is joined), being in the planar ring state complementary to that subtended by the associated rod, varies in that state from about 95° for the 55 millimeter pessary to about 75° for the 95 millimeter pessary. The effective arcuate length of the springs is preferably at least substantially equal to about three-fourths of the length of the rods of any given pessary, for satisfactory results, and a free spring length of at least about $1\frac{1}{2}$ ", measured between adjacent rod ends, has been found suitable.

The foregoing rod dimensions may be varied somewhat without seriously affecting the ease of introduction or efficacy of the pessaries involved. Care should be taken that the effective spring length is ample to insure that the springs will stretch sufficiently to be sprung onto and be retained on and will not accidentally snap off the inserter.

As has been noted, all of the relatively stiff segments are preferably of rod stock which is unipliable by hand so that it will not get out of shape in service, and may be produced by automatic screw machines in straight form and then machine-bent to the desired curvature. They are

preferably made of stainless or other steel or other metal, or other suitable material. The reduced ends of each rod are preferably coaxial with the remainder of the rod and have ample bearing engagement with the springs, notwithstanding manufacturing tolerances as a result of which one or more of the springs may not quite touch a rod shoulder or shoulders in some instances, and will not accidentally spring apart before being united with the springs by solder, crimping or otherwise. We have found it satisfactory for our purposes to use a spring coil diameter of about $\frac{3}{8}$ " and a rod stock diameter of about $\frac{5}{16}$ ". However, the relative cross-sectional dimensions of the springs and rods obviously may be varied to obtain any desired rim diameters and any desired thickness of molded rubber coating at the bottoms of the rods. Indeed, if desired, the diameters of the springs and rods could be identical, or the rods could be of greater diameter than the coils.

Various modifications may suggest themselves to those skilled in the art without departing from the spirit of our invention. Hence we do not wish to be restricted to the specific forms shown or uses mentioned, except to the extent indicated to the appended claims, which are to be interpreted as broadly as the state of the art will permit.

We claim:

1. A pessary comprising a substantially annular pessary core including a pair of relatively stiff arcuate segments, and springs rigidly connected with and spacing apart said segments, said pessary when free being folded about a line substantially bisecting the portions of said springs between said segments and, when said segments rest over a horizontal surface, having the projected appearance in plan substantially of an ellipse.

2. A pessary comprising a substantially annular pessary core including a pair of manually inflexible arcuate segments, and springs rigidly connected with and spacing apart said segments, said pessary when free being folded about a line substantially bisecting the portions of said springs between said segments.

3. A pessary comprising a substantially annular pessary core including a pair of manually inflexible arcuate segments, and springs rigidly connected with and spacing apart said segments, said pessary when free being folded about a line substantially bisecting the portions of said springs between said segments, one of said springs being manually bendable beyond its elastic limit to vary the free shape of said pessary.

4. A pessary comprising a substantially annular pessary core including a pair of arcuate spring segments and a pair of substantially identical arcuate manually inflexible rod segments rigidly connected alternately with said spring segments in substantially end-to-end relation, said core when free being folded about a line substantially bisecting said spring segments, one of said spring segments being manually bendable to an altered permanent set to vary the free shape of said pessary.

5. A pessary comprising a substantially annular pessary core including a pair of arcuate spring segments and a pair of arcuate manually inflexible rod segments rigidly connected alternately with said spring segments in substantially end-to-end relation, said core when free being folded about a line substantially bisecting said spring segments and, when said rod seg-

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ments rest on a horizontal surface, having the projected appearance in plan substantially of an ellipse, said spring segments being manually bendable to an altered permanent set to vary the free shape of said pessary.

6. A pessary comprising a substantially annular pessary core including a pair of arcuate coil spring segments and a pair of manually inflexible arcuate rod segments rigidly connected alternately with said spring segments in substantially end-to-end relation, said pessary when free being folded about a line substantially bisecting said spring segments, said spring segments being resiliently yieldable in response to manual pull transverse to their length to enable said pessary to be releasably sprung onto a pessary inserter.

7. A pessary comprising a substantially annular pessary core including a pair of arcuate coil spring segments and a pair of manually inflexible arcuate rod segments rigidly connected alternately with said spring segments in substantially end-to-end relation, said pessary when free being folded about a line substantially bisecting said spring segments, one of said spring segments being manually bendable to an altered permanent set to vary the over all shape of said core, said spring segments being resiliently yieldable in response to manual pull transverse to their length to enable said pessary to be releasably sprung onto a pessary inserter.

8. A pessary comprising a substantially annular pessary rim including a pair of manually inflexible rod segments and a pair of spring segments rigidly connected alternately with said rod segments in substantially end-to-end relation, each spring segment being about three-fourths as long as each rod segment, said pessary when free being folded about a line substantially bisecting said spring segments and having, when free, the projected shape of an oval, each spring segment being manually bendable to a different permanent set to facilitate positioning of the pessary in the vagina, said pessary being substantially extensible elastically in the direction of said line to enable said core to be releasably sprung onto a pessary inserter.

9. A pessary comprising a substantially annular pessary core including a pair of springs and a pair of substantially spaced manually inflexible wires rigidly connected alternately with said springs in substantially end-to-end relation, said pessary when free being folded about a line substantially bisecting said spring segments and, when said pessary rests freely on a horizontal surface, having the projected appearance in plan substantially of an ellipse, one of said springs being coiled, the coils being spaced apart and manually bendable to an altered permanent set to vary the free shape of said pessary, each of springs being at least about $1\frac{1}{2}$ "

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in length to render said pessary substantially extensible in the direction of said line to enable said pessary to be releasably sprung onto a pessary inserter.

10. A pessary comprising a substantially annular pessary core including a pair of longitudinally arcuate manually inflexible wires spaced apart by springs, said pessary when free being folded about a line substantially bisecting said springs, the ends of each spring between said wires converging toward the intermediate portion of said spring, one of said springs having mutually spaced coils manually bendable to an altered permanent set to vary the over all shape of said pessary, said pessary being substantially extensible in the direction of said line to enable said pessary to be releasably sprung onto a pessary inserter.

11. A pessary comprising a substantially annular pessary core including a pair of arcuate springs and a pair of arcuate relatively stiff segments rigidly connected alternately with said springs, each of said springs subtending an angle between 90° and 180° , said pessary when free being folded about a line substantially bisecting said springs.

12. A pessary comprising a substantially annular pessary core including a pair of arcuate springs and a pair of relatively stiff arcuate segments rigidly connected alternately with said springs, the portion of each spring between segments being at least about three-fourths as long as each segment, said pessary when free being folded about a line substantially bisecting said springs, each spring when free lying in a plane substantially tangent to said segments.

13. A pessary comprising a substantially annular pessary core including a pair of arcuate springs and a pair of relatively stiff arcuate segments rigidly connected alternately with said springs, each of said springs subtending an angle between 90° and 180° , said pessary when free being folded about a line substantially bisecting said springs, each spring comprising mutually spaced coils manually bendable to a permanent set whereby to alter the free shape of the pessary to facilitate positioning of the pessary in vaginal canals of different shapes, said spring being at least about $1\frac{1}{2}$ " in length.

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