Jan. 19, 1954 R. J. GLENNER 2,666,428

SELF-RETAINING CUL-DE-SAC RETRACTOR

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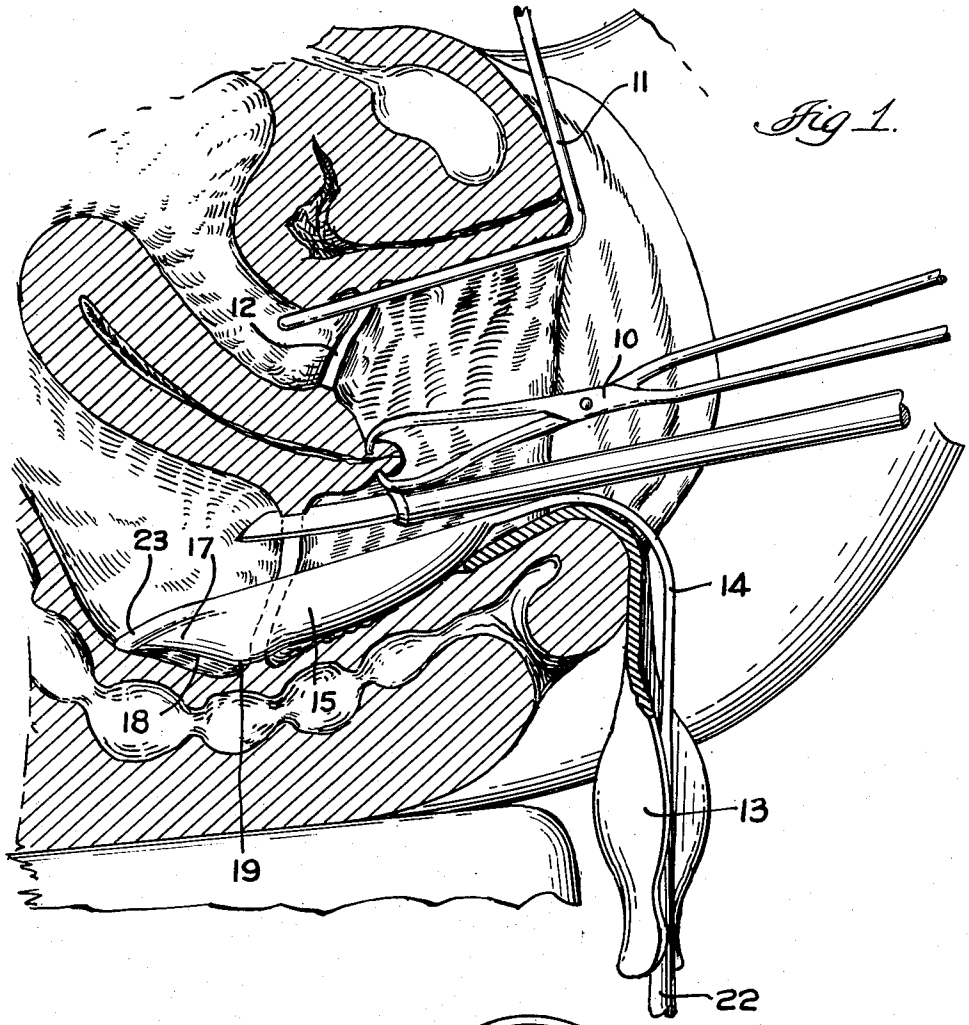

Fig 1.

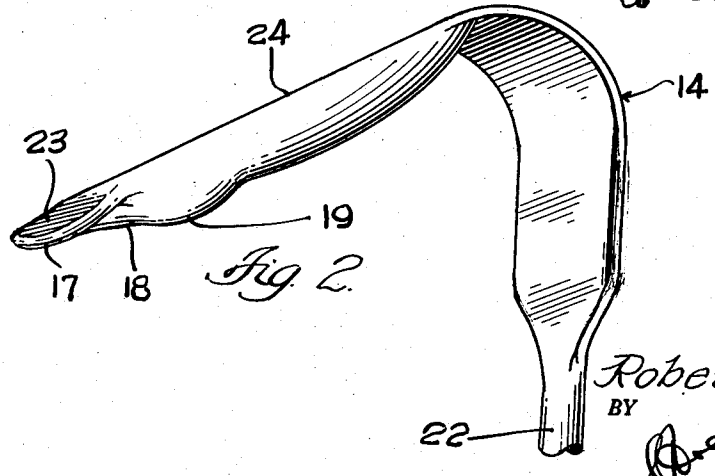

Fig 2.

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Fig 3.

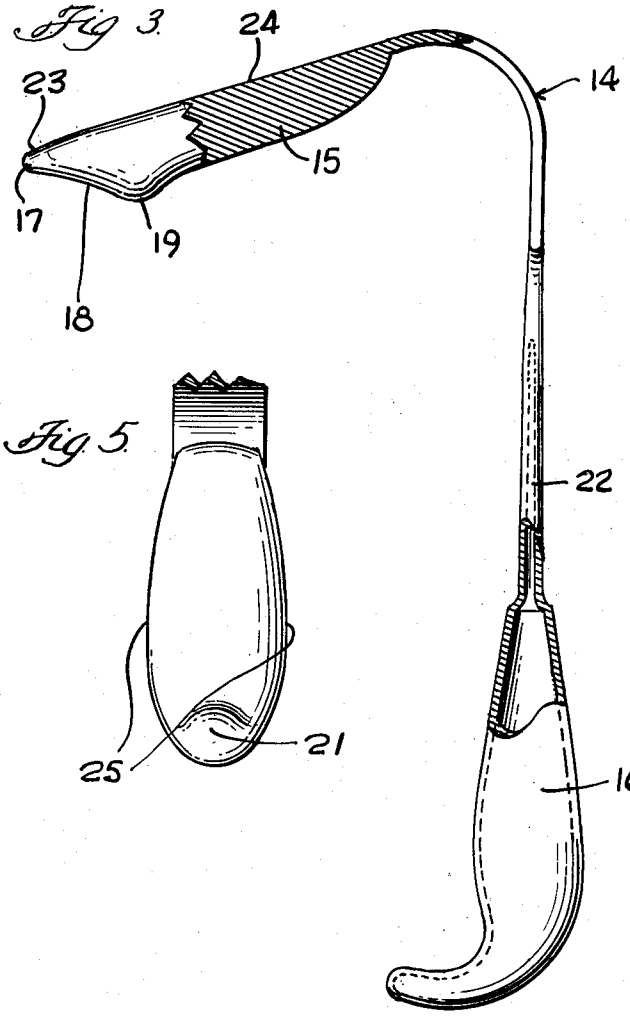


Fig 4.

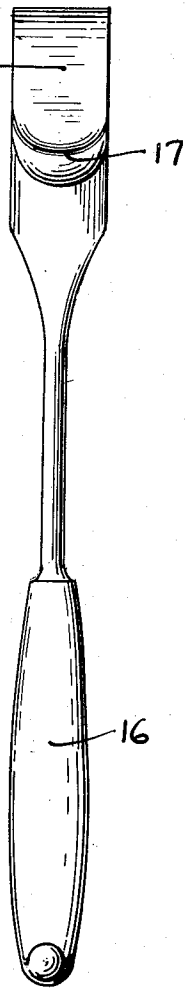
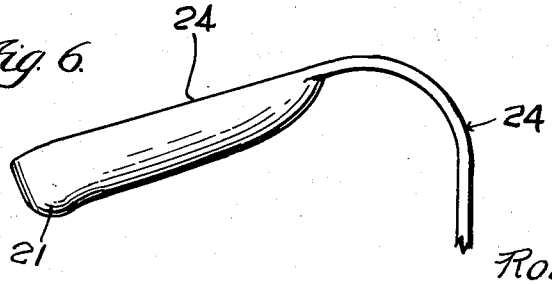


Fig 5.

Fig 6.



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SELF-RETAINING CUL-DE-SAC RETRACTOR

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2 Claims. (Cl. 128—20)

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The present invention relates to surgical instruments and concerns itself more particularly with self-retentive vaginal retractors.

The performance of a vaginal panhysterectomy is facilitated by the use of narrow bladed retractors used in the posterior distention of the vaginal cavity and cul-de-sac. These instruments are held in position by an operative assistant whose full attention toward retaining this tool properly in position, has been required throughout the entire conduct of the operation. The placement and retention of surgical retractors having right angularly bent blades and equipped with heretofore known shape and weight characteristics has thus required considerable physical effort and attention, appropriating both hands of one of the operative attendants or assistants until the vaginal wall is closed.

In order to make the necessary field availability for the operating surgeon, retraction of the vaginal walls is required both anteriorly and posteriorly as well as bilaterally. Four hands are thereby tied up in the performance of retraction so that serving of their usual tasks by the assistants who do retraction such as sponging, placing of sutures, etc., under such circumstances may not be had. Surgical implementation by such assistance is frequently of great importance to the surgeon but because availability of further help is ruled out by the inherent space limitations which surround the operative field, it is now proposed to relieve to a partial degree at least, the manual demands which have been imposed by retraction.

A principal object of the present invention, therefore, is to achieve a self-retentive characteristic in posteriorly applied retractors to cause them to remain in the placed position so that intermittently or occasionally an operative assistant when required to do so, may release his hold therefrom to do another function or assistance without incurring the risk that such retractor will meanwhile become expelled or dislodged from its placement.

Another object of the present invention is one of providing initially a posterior placement vaginal retractor which, following the peritoneal penetration, may be made to serve the consequent purpose of retracting the vaginal mucosa and the incised posterior peritoneum by the simple expedient of further insertion and without requiring relaxation from its original placement in order to gain entry into the cul-de-sac.

Further and additional objects of this invention are such as will become more evident during

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the course of the following detailed description and explanation.

For a better understanding of the principles and methods of operation which underlie this invention, reference will now be had to the accompanying drawings, and to the following detailed description, in both of which like reference numerals designate corresponding parts throughout, and in which:

Fig. 1 is a median sectional side view through the uterus and adjacent areas in which posterior and anterior incisions of hysterectomy have been made into the vaginal mucosa and illustrating retractors distending the cul-de-sac and vaginal vault preparatory to the making of the lateral incisions.

Fig. 2 is an enlarged perspective view of the upper portion of a vaginal retractor embodying therein certain principles of the present invention.

Fig. 3 is a side elevational view of the entire retractor with portions broken away to reveal interior construction thereof.

Fig. 4 is a front elevational view of an instrument similar to the one illustrated in Fig. 3.

Fig. 5 is a fragmentary inverted plan view of a portion of modified retractor instrument embodying certain principles of the invention, and

Fig. 6 is a side elevational view of a retractor embodying certain of the features illustrated in Fig. 5.

When removal of the uterus through the vagina is indicated, a patient is prepared antiseptically and supported on a lithotomy table preferably in the Trendelenburg position. A weighted vaginal speculum 13 is pendulously hung from the posterior lip and as a consequence there is exerted in this direction an initial influence of vaginal retraction. Normally this exposes sufficient visualization as well as access to permit the cervix to be seized by means of tenacula 10 or forceps and brought down.

From this point on, operative techniques differ in respect to the incisional sequences. In some instances, the posterior vaginal mucosa is incised ahead of the anterior wall. Other surgeons follow a reverse order. However the progress of the operation may be in respect to this phase of procedure, the function of a self-retentive retractor is equally important as regards the several advantages which will now be discussed.

In order to establish the required field clearance for the making of adequate transverse incisions as well as thereafter for making of the

lateral incisions, the vaginal perimeter is distended by a series of tools as follows: anteriorly by a right angle, thin bladed, retractor 11, Fig. 1, which is first inserted to a limited distance somewhat less than that in which it is shown in Fig. 1.

Laterally, the vaginal passageway is distended by opposed curved blade retractors (not shown) fashioned with right and left side handles so that they may be grasped at close range. A narrow bladed retractor 14 is lodged against the posterior vaginal wall and urged in opposition to the anterior instrument 11. One operative assistant grasps the anterior retractor in one hand and one of the lateral retractors in the other, and the other assistant grasps the remaining retractors in reverse manner. This practice permits the assistants to stand with their bodies well away from the operating surgeon's position which is that of seating located at the center of the operating table end. Multiple spot lighting at inclined angles which flank the position of the operator serves to illuminate the field for thorough visualization.

The force exerted in the posterior direction by the speculum 13 is supplemented by means of a posterior retractor 14 designed so as to have a narrow bladed characteristic of about the same order as the anterior retractor 11 but preferably formed as by forging or bonding with a pouch or hull-like protuberant portion 15 preferably made of solid metal, whereby to contribute a predominant weight and mass factor at this end of the instrument in contrast with the hollow handle portion 16, Figs. 3 and 4, which is permitted to gravitate pendulously within the central channel of the weighted sections of the speculum.

In the preferred embodiment of design which has been illustrated in Figs. 1 through 4, the foreportion of the pouch 15 is characteristically sloped with smoothly rounded surfaces after the manner indicated at 17 in Fig. 2, permitting it to serve as an entering wedge for admission into the cul-de-sac after the posterior incision into the vaginal mucosa has been made.

In addition to this cam shaped entering nose portion 17 the blade is further characterized by having provided at the conclusion of the widest part of the wedge or sloping surface 18 a shallow bulbous enlargement 19. This constitutes the largest girth of the blade and is designed in order to avail of the constricting muscular effects surrounding the posterior incision with the object of assisting the retentive qualities of the retractor when placed into the position in which it appears in Fig. 1.

The nose portion 17 which has been described as an entering wedge may be said to resemble an inverted duck bill. In the preferred design its top surface 23 has been indicated as sloping curvedly downward of the tangential surface 24. This variation is of secondary importance having as its purpose to facilitate a descending movement to the blade and to oppose somewhat the displacing effect of the wedge slope 18.

From the foregoing it is to be understood that retractors 11 and 14 are both utilized in two-position placements, one before its adjacent wall has been entered and the other following such penetration. In the case of the posterior tool 14, however, gravity may be utilized to give both of its placements the quality of self-retentiveness or stability in order to release for other duties a hand of one of the assistants otherwise

necessarily devoted to retraction exclusively. This relief involves much more than mere economy for the entire theater of activity where such a surgical operation is conducted is crowded on account of the occupation by the surgeon and the two assistants.

With but three pairs of hands available to conduct all of the various functions which are required in a panhysterectomy, the liberation of one hand from retraction even for brief intervals of time affords much needed surgical assistance. With the freed hand, one assistant may now be available for applying clamps, making sutures, sponging away blood in order to clear the field for observation, etc. Without self-retention when an assistant released his hold of a retractor to devote himself to the execution of an assist function, the relaxation of his hold of a conventional retractor resulted invariably in a bodily dislodgement thereof with following ejection. Falling to the floor constitutes a contamination of the tool and requires replacement by a properly sterilized substitute. In contemplation of such mishaps, pluralities of retractors have had to be prepared in readiness for substitution.

Having to replace the posterior retractor during the peritoneal incision may involve critical loss of time, as well as require realignment of accomplished procedures, such as partially ligated blood vessel stumps and ligaments. A secure and yet comfortable retention of an adequate and effective retraction will, for manifest reasons, reduce various elements of surgical risk in these classes of operation. The proposed retractor is significantly shaped and weighted at its insertable extremity or blade portion and in over-all respects proportioned after the manner of the examples illustrated in Figs. 3 through 6. The total effect of this improved design achieves security of placement and retention on a materially improved level. By constructing this instrument so that the preponderance of its mass and weight is located in the blade portion and by shaping this portion after the manner of a bulbous ship's hull, an efficient retractive performance is had upon which the surgeon may confidently rely without sacrificing precious space or impairing access.

The muscular elasticity inherent in the incised vaginal wall is utilized to constrictively encompass the bulbous under-belly of the retractor blade preferably at a region just in front of its largest swell portion 19.

In Figs. 5 and 6, a modified swell has been incorporated by reason of which the blade is made self-retentive on account of its sideward ovate shape 25 in combination with a terminating bulbous swell of minor significance. In this case dislodgement is resisted by the weighted seating of swell 21 as well as by the constricting effect of the incision boundary working against the ovate hull. In this embodiment an entering wedge has been omitted although its incorporation is practically combinable if desired. Thus, self-retentiveness respecting surgical fixtures is obtained from cavity seating shapes combined with weight resolution without drawing upon any one of these factors alone to an extent which sacrifices convenience in manipulation or makes any concessions toward diminution of space in the operative field.

In another respect the improved types of retractors are rendered more stable and capable of sustaining themselves in their placed position. Attention is again directed to Figs. 1 and 3. It

is proposed that a large acute angle which preferably may correspond with the inclination from normal inherent in the Trendelenburg position, be established between the blade and its shank. Thus as viewed in Fig. 1, the handle rod 22 hangs perpendicular when the inserted portion 15 is lodged in either of its placements before or after penetration of the vaginal wall.

When the instrument is thus disposed and hung over the insert hook of the weighted speculum it will be found to obtain a natural weight balance slightly favoring the blade portion. This is further conducive to stability and retention of placement and less susceptible to change in angle. The attainment of this preponderance of weight is achieved by making the belly portion 15 solid while at the same time making the handle portion 16 throughout hollow, after the manufacturing techniques of tableware and similar articles. This makes it feasible to produce a smooth, all metal integral fixture, easy to sterilize, polish, and otherwise maintain in conformity with high standards of operating room hygiene.

The stem and handle sections require to be made of continuous contour and seamless metal components free of crevices or recesses. After sterilization, all surgical instruments including retractors, required to possess physical characteristics whereby they may be securely held by a glove encased hand as against influences which are conducive to slipping. For this reason, the handle portion 16 is advantageously constructed so that it has a substantial palm-fitting size and shape. On this account such tools would ordinarily possess a greater preponderance of weight at the handle than in the blade. The hollowing out of the handle 16 and the shank 22 and the weight loading in the blade therefore achieves a radical departure in weight distribution with regard to surgical retractors consistent with a unitary construction free of crypts, crevices or internal recesses which would present problems respecting sterilization.

When the vaginal wall is to be closed, the lifting and removal of the improved posterior incision retractor is attended with the same ease and manipulative convenience as that which characterized the conventional thin bladed types of instruments. In keeping with this objective, all tapering or sloping surfaces are throughout rounded and so sloped as to have gradual convergence and but shallow protuberance. It is to be observed that the top of the instrument is substantially flat, the same as in the case of flat bladed retractors. This permits the blade to repose well out of the way so as not to interfere with the freedom of manipulation in the limited space within which the surgeon requires to do a number of procedures while working against time. The same instrument which is thus capable of efficient self-retention is made to serve the dual

functions of initial vaginal wall vault retraction and thereafter to be advanced into the cul-de-sac to retract both the vaginal wall and vault concurrently.

While the present invention has been explained and described with reference to illustrated examples of embodiment, it will be understood nevertheless that various modifications and variations may be made without departing from its essential spirit or scope. Accordingly it is not intended to be limited by the precise language employed in the foregoing detailed specification nor by the features of the accompanying illustrations, except as indicated in hereunto appended claims.

The invention claimed is:

1. A vaginal wall and cul-de-sac retractor comprising an integral metallic instrument having a shank portion flaring at one of its ends into a curved flat neck portion, an angularly disposed blade joined with said flat neck portion, said blade having a substantially flat outer surface constituting a tangential continuation of the corresponding surface of said curved flat neck portion and a pouch-like protuberant under surface opposed to its said outer surface, the longitudinal contour of said pouch-like under surface including an entering wedge end flare merging into a maximum swell and then diminishing elliptically, and a hollow palm-fitting handle at the other end of said shank portion.

2. A dual placement retractor for vaginal hysterectomy comprising, an integral instrument having a shank portion adapted to be pendulously supported in a vertical position, a bulbous weighted blade portion disposed at oblique angularity with said shank portion, said blade and shank portions being connected by a curved flat neck portion, a palm-fitting handle carried at the lower extremity of said shank portion having a greater volume dimension than said bulbous weighted blade portion but having a hollow interior cavity so as to afford a lesser weight resolution than that of said blade portion, whereby retention of the blade portion during both pre-incision and post-incision placement in respect to the vaginal mucosa is thereby gravitationally resolved for overcoming sphincteral ejection.

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