

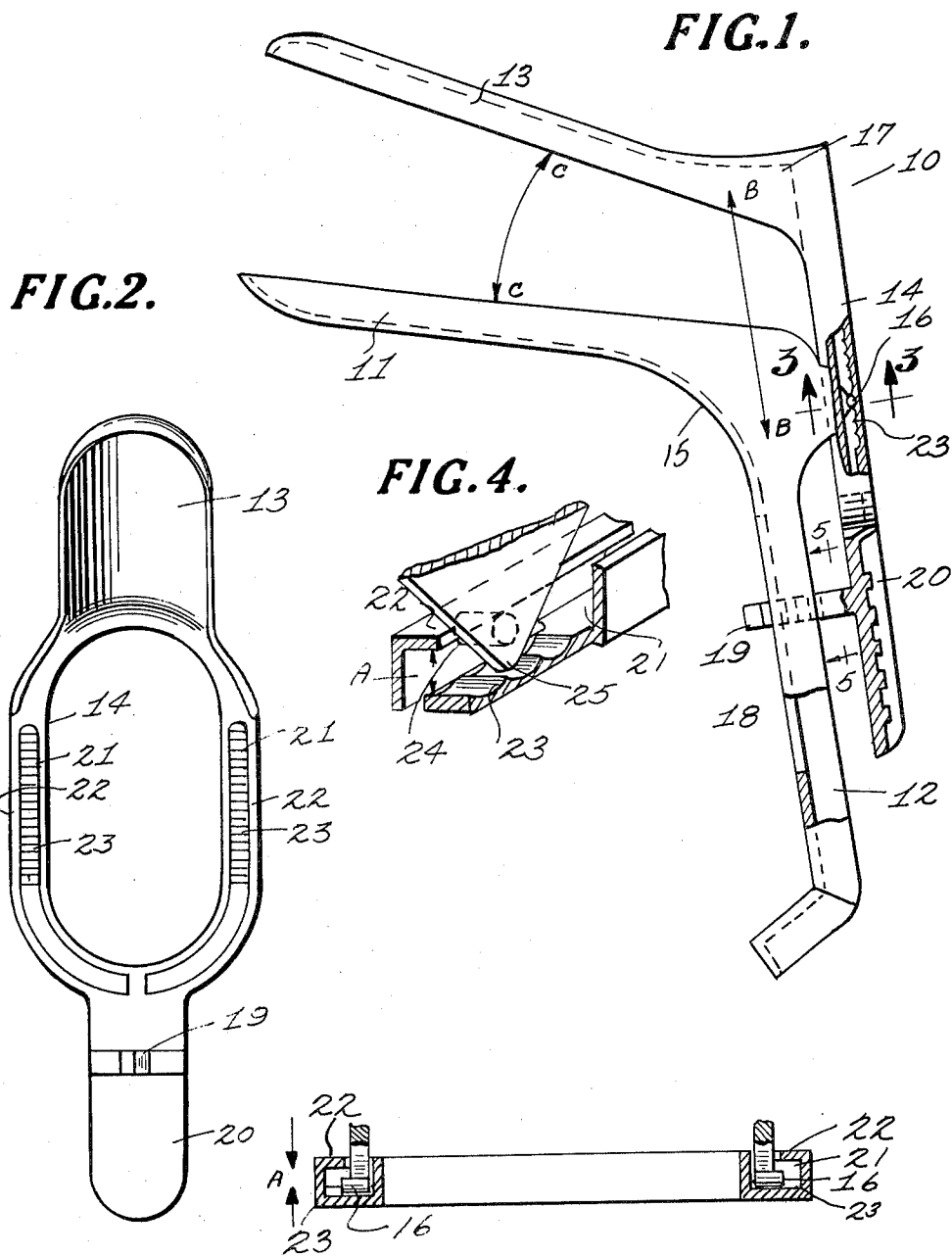
April 19, 1966

W. P. MURPHY, JR
PIVOTED VAGINAL SPECULUM HAVING LINEAR
AND ANGULAR BLADE ADJUSTING MEANS

3,246,646

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2 Sheets-Sheet 1



INVENTOR

FIG. 3.

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FIG. 6.

FIG. 5.

FIG. 7.

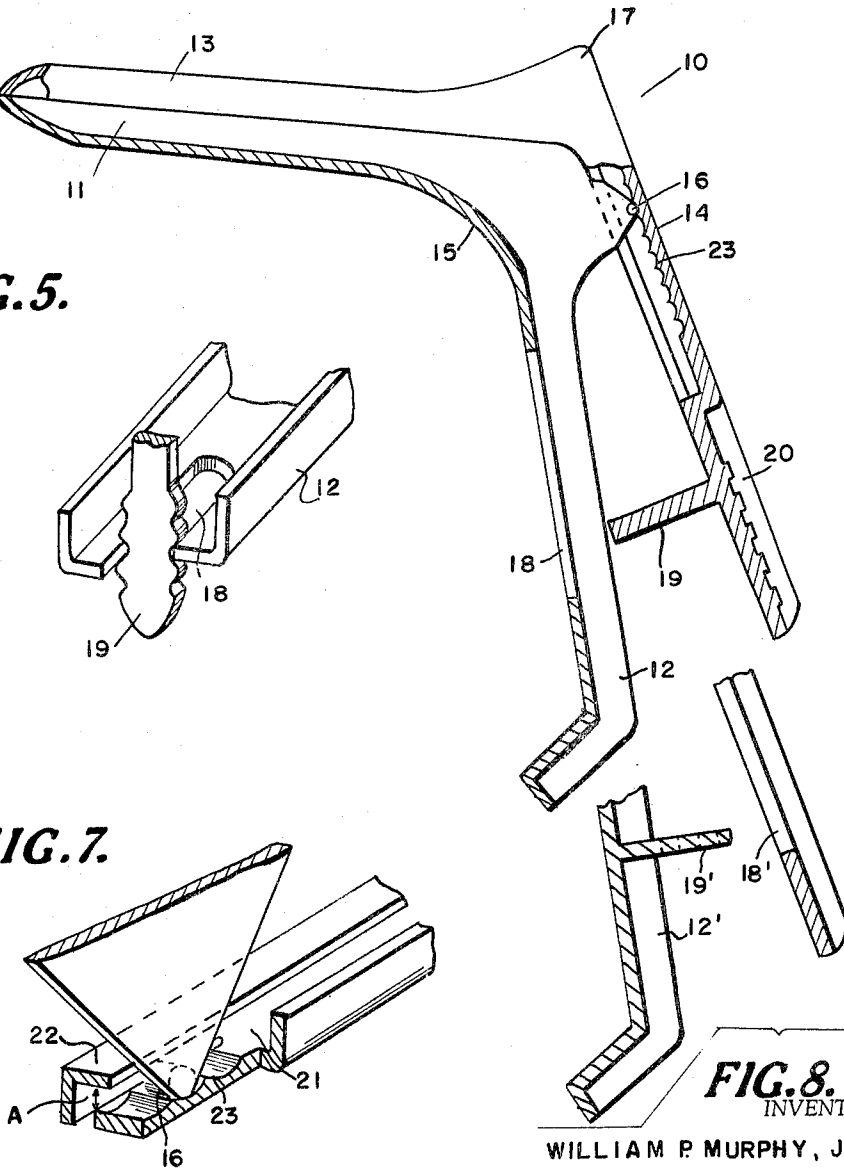


FIG. 8.
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PIVOTED VAGINAL SPECULUM HAVING LINEAR AND ANGULAR BLADE ADJUSTING MEANS

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4 Claims. (Cl. 128—17)

This invention generally relates to surgical specula, and more particularly to a novel vaginal speculum.

In order to facilitate the examination and the treatment of interior body cavities it is necessary to employ an instrument to dilate such cavities. Specula of various kinds have been devised for this purpose.

Frequently specula are of a type that permit only rotary or arcuate relative movement of the blades. In such specula a pivotal or hinged connection is provided between the blades. As the blades are moved relative to one another they describe an arcuate path about a transverse axis passing through the pivotal connection.

In addition to this angular rotation of the blades it is necessary that the blades be bodily adjustable relative to each other. That is, the instrument should not only permit substantial angular rotation of the blades but should also permit relative linear bodily adjustment or separation of the blades in aligned relation.

Heretofore specula which have permitted these two distinct modes of adjustment have comprised four to six parts, and were relatively cumbersome, complicated and expensive devices. Another disadvantage was the difficulty involved in sterilization of such complex instruments.

Therefore the principal object of the present invention relates to a novel speculum of simplified construction permitting two distinct modes of adjustment of the blades.

A further object of this invention relates to a novel vaginal speculum comprised of only two parts and constructed to permit relative angular rotation as well as bodily separation of the blades.

Other objects and the entire scope of the present invention will become apparent from the following detailed description and by reference to the accompanying drawing. It should be understood, however, that the detailed description and specific examples while indicating preferred embodiments of the invention, are given by way of illustration only, since various changes and modifications within the spirit and scope of the invention will become apparent as the description herein progresses. Reference now being made to the accompanying drawings which form a part hereof.

FIGURE 1 is a view in side elevation partly in section, of a duck-billed vaginal speculum constructed in accordance with my invention;

FIGURE 2 is a front elevational view of the upper member of the speculum;

FIGURE 3 is a section taken on lines 3—3 of FIGURE 1, the view looking in the direction of the arrows;

FIGURE 4 is a fragmentary perspective view showing a modification of the present invention;

FIGURE 5 is a fragmentary perspective view taken generally along line 5—5 of FIGURE 1 looking in the direction of the arrows;

FIGURE 6 is a view in side elevation partly in section, of my novel speculum with the blades in closed position;

FIGURE 7 is a fragmentary perspective view showing the preferred connection between the upper and lower blades; and

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FIGURE 8 is a view in side elevation partly in section showing a modification of the present invention.

In the drawing numeral 10 generally indicates one form of a duck-billed vaginal speculum constructed in accordance with my invention which may preferably be composed of metal or plastic.

As shown in FIGURES 1, 2 and 7 the speculum generally comprises two parts, lower member 15 and upper member 17. Lower member 15 includes a lower blade 11, two laterally projecting pin-like portions or trunnions 16 and handle portion 12, all integrally formed. Handle portion 12 is provided with a longitudinal slot 18. Upper member 17 includes an upper blade 13, an angularly projecting generally U-shaped portion formed by transversely spaced parallel arms 14, a lever portion 20 and a multiposition latch 19, all integrally formed.

Arms 14 are provided with longitudinal recesses 21 adapted to receive trunnions 16 of lower member 15 and to retain said member in pivotal and sliding engagement with upper member 17. To this end, retaining portions 22 and a plurality of fulcrum points 23, in the form of transverse serrations are provided in recesses 21 as seen in FIGURES 1—3 and 7. The fulcrum points 23 are adapted to pivotably engage trunnions 16 when in operative relation. The distance A, indicated in FIGURES 3 and 7, between the inner surface of retaining portions 22 and the crests of fulcrum points 23 must permit sufficient clearance for trunnions 16 to disengage the fulcrum points 23 and slide longitudinally of recesses 21.

As best seen in FIGURE 1 multiposition latch 19 projects from lever portion 20 toward, and in alignment with, slot 18 in handle portion 12. Multiposition latch 19 is provided with a plurality of serrations adapted to resiliently engage the side walls of slot 18 so as to retain a given angular adjustment of the blades, as best seen in FIGURE 5.

Preferably lever portion 20 is provided with a plurality of ridges in order to facilitate gripping said portion.

Since trunnions 16 may slide longitudinally within recesses 21, it is readily seen that the blades 11 and 13 may be bodily moved relative to each other in aligned relation, as indicated by arrow "B—B" in FIGURE 1. When the desired bodily separation of the blades is obtained, engagement of trunnions 16 with a pair of fulcrum points 23 prevents further bodily movement of the blades. It is thus seen that a wide range of blade separation is possible.

The blades may also be adjusted in angular relation, as indicated by arrow "C—C" in FIGURE 1. By moving lever portion 20 towards or away from handle 12, trunnions 16 will each pivotably engage one of the fulcrum points 23 in recesses 21 and the blades will be angularly rotated relative to each other about a transverse axis passing through trunnions 16. As lever 20 is moved to rotate blade 13 away from blade 11, latch 19 will engage the side walls of slot 18.

It is apparent that my novel construction permits not only a wide range of bodily blade separations, but also a wide range of angular rotation of the blades.

Since the engagement of latch 19 with the side walls of slot 18 prevents angular rotation of the blades and the engagement of trunnions 16 with fulcrum points 23 prevents relative bodily movement of the blades, the blades will remain in their adjusted position within the body cavity. In fact, the pressure exerted by the walls of the body cavity tending to close the blades tends to force the trunnions into firmer engagement with the fulcrum points and thus increases the resistance of the blades to closing. The resistance of the blades to closing while within the body cavity is thus limited only by the resist-

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ance of the latch 19 to disengagement from the side walls of slot 18.

The following is an example of using my novel speculum. The speculum is inserted into the vaginal canal with the blades in completely closed position as shown in FIGURE 6. The upper and lower blades are separated the desired distance apart in parallel relation to each other. The upper blade is then tilted with respect to its companion blade by applying pressure to lever 20 which also causes the trunnions to firmly engage a pair of fulcrum points and the latch member 19 to engage the side walls of slot 18. The speculum is thus in the desired dilating position. The instruments necessary for the gynecological procedures are then inserted into the vaginal canal through the opening defined by arms 14 and the upper and lower blades 11 and 13.

FIGURE 4 shows a modified form of connection between the upper and lower blades which permits both bodily separation and angular rotation of the blades. In the modification shown in FIGURE 4 it will be seen that the lateral projections 24 do not engage the fulcrum points 23, but rather serve only to retain the blades in sliding engagement with one another. The projecting portions or shoulders 25 provided on the rearward extensions of the lower blade are adapted to pivotably engage the fulcrum points 23 so as to permit angular rotation of the blades. As in the preceding embodiment, the distance A between the inner surface of the retaining portions 22 and the crests of the fulcrum points 23 must permit sufficient clearance for the shoulders 25 to disengage the fulcrum points 23 and slide longitudinally of recesses 21.

FIGURE 8 shows a modified form of my latch arrangement wherein the multiposition latch 19' is integrally formed with the handle portion 12'. The multiposition latch 19' projects from the handle portion 12' toward, and in alignment with slot 18' in lever portion 20'. Multiposition latch 19' is provided with a plurality of serrations adapted to resiliently engage the side walls of slot 18' so as to retain a given angular adjustment of the blades.

The present invention will thus be seen to completely and effectively accomplish the objects enumerated hereinabove. By providing a speculum of my novel construction two distinct modes of adjustment are permitted, namely, both substantial angular rotation and linear bodily separation of the blades. At the same time the speculum comprises only two parts rather than the numerous parts and cumbersome arrangements of the prior art, thus permitting simplified manufacture and operation in addition to facilitating sterilization of the instrument.

It will be realized however, that various changes and substitutions may be made to the specific embodiments disclosed herein for the purpose of illustrating the principles of this invention without departing from these principles. Therefore, while the present invention has been described with particular reference to the specific forms shown in the drawings, it is to be understood that such is not to be construed as imparting any limitations upon this invention, which includes all modifications encompassed within the spirit and scope of the following appended claims.

What is claimed is:

1. A speculum comprising in combination a first one-piece member including an elongated first dilator blade member, a pair of laterally spaced parallel elongated arm members extending angularly from one end of said first

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blade member terminating in an integral extension forming a first handle means; an elongated recess in each of said arm members extending longitudinally thereof, each of said recesses having a longitudinally extending interior surface provided with a plurality of transversely extending serrations forming a plurality of fulcrum points, and a longitudinally extending retaining surface spaced from and at least co-extensive with said serrations so as to define therebetween an elongated retaining slot; a second one-piece member including a second dilator blade member having at one end a pair of laterally spaced pin-like projections integral therewith, each of said pin-like projections extending transversely within one of said retaining slots so as to be movable longitudinally thereof and thereby permit bodily separation and closing of said blade members while maintaining said first and second blade members operatively connected; a pair of transversely spaced arcuate pivot surfaces at said one end of said second blade member; each of said arcuate pivot surfaces being disposed within one of said elongated recesses so as to be pivotally engageable with selected fulcrum points formed by said serrations to thereby permit substantial angular rotation on said first and second blade members relative to one another at selected bodily separations of said first and second blade members; a second handle means integral with said second blade member extending angularly from said one end thereof, and selectively interengageable releasable latch means carried by said first and second handle means interengageable upon relative angular rotation of said first and second blade members whereby said first and second blade members will be releasably retained in a desired adjusted position.

2. The structure defined in claim 1 wherein the pair of pin-like projections provide at least a portion of the arcuate pivot surfaces.

3. The structure defined in claim 1 wherein the latch means comprises an elongated latch slot means in one of the handle means and a latch projection means extending from the other handle means toward and in operative alignment with said elongated latch slot means so that said latch projection means can be resiliently engaged by the side walls of said elongated latch slot means.

4. The structure defined in claim 3 wherein the latch projection means is provided with a plurality of serrations adapted to resiliently engage the side walls of the elongated latch slot means to thereby provide a plurality of predetermined increments of angular blade adjustment.

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RICHARD A. GAUDET, *Primary Examiner*.

JORDAN FRANKLIN, *Examiner*.