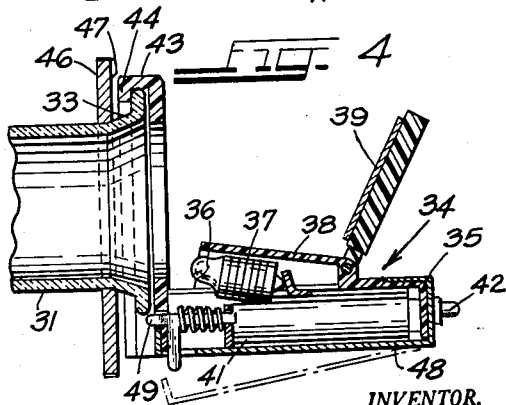


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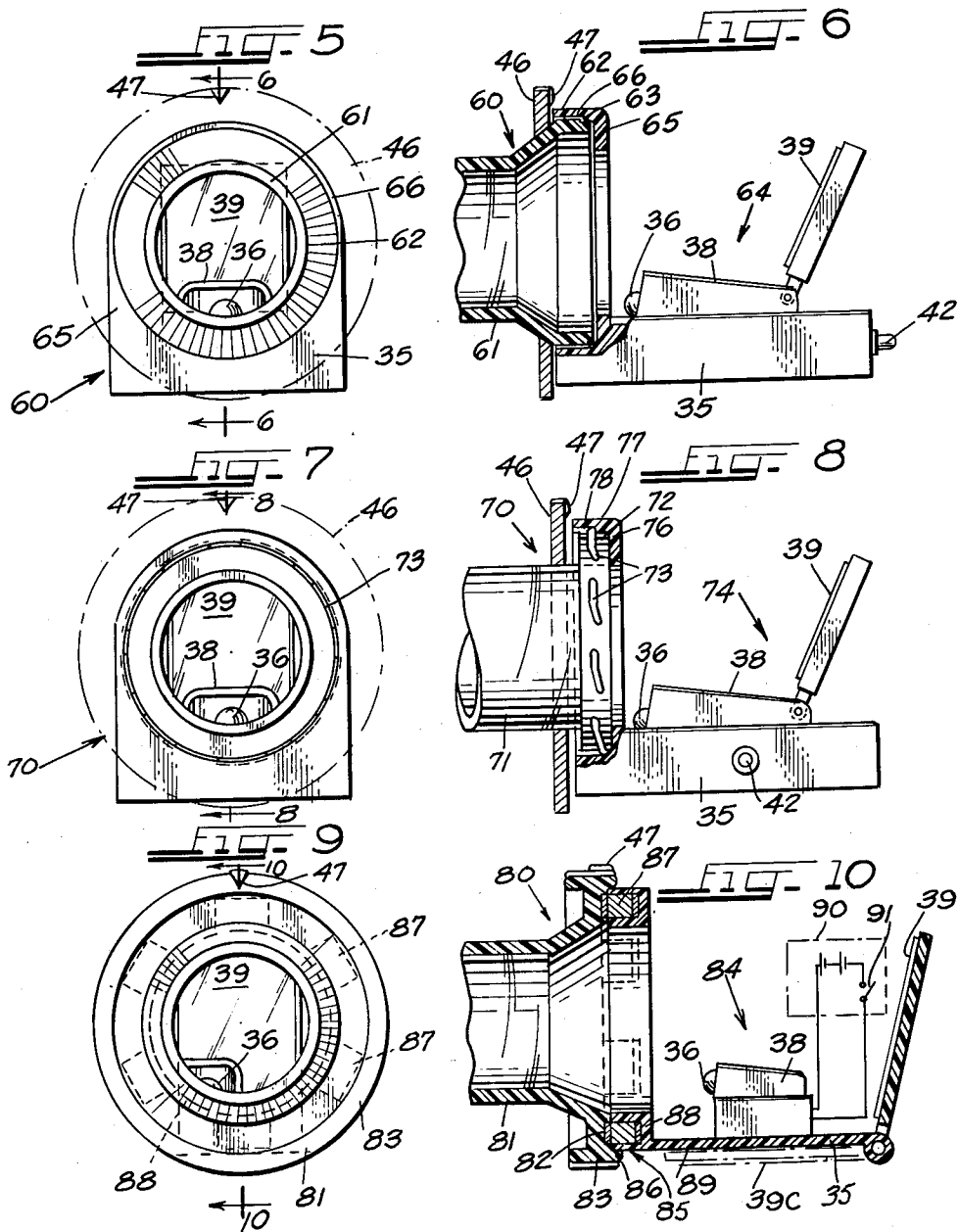
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APPARATUS FOR AUTO-VAGINOSCOPY

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2 Sheets-Sheet 2



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**APPARATUS FOR AUTO-VAGINOSCOPY**  
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 Filed May 23, 1960, Ser. No. 30,804  
 6 Claims. (Cl. 128-6)

This invention relates to an apparatus for internal inspection of the vagina and more particularly to an apparatus which renders the vagina and the cervix accessible to vision and manipulation by a woman without necessitating a visit to a doctor's office.

Many kinds of optical apparatus have been used by physicians, in the past, for inspection and examination of the interior of different body cavities. Typical examples are the otoscope for examination of the ears, the rectoscope for use in rectal examination, the cystoscope for examination of the bladder, and the like. In general, however, none of these devices have been used by the patient for examination of his own body cavities. The only "scope" in general use for personal examination is simply a hand mirror and suitable light, which can be used by a person to observe the inside of his or her mouth and all other accessible parts of the body, with the single exception of the inside of the vagina.

The problem presented with respect to the examination of the vagina is quite different from inspection of other body cavities. This is due in part to the construction and in part to the position of the vagina, which is a relatively insensitive, deep, collapsed pocket which is quite inaccessible for examination and inspection except for the entrance portion thereof. As a consequence, a woman can discover a discharge, a tumor, or other abnormal condition only when the condition produces symptoms on the outside such as spots on the underwear or when it produces itching, other skin irritation, or pain. As a consequence, necessary vaginal hygiene may be postponed because of lack of recognition of the need therefor, and this is also true of more serious conditions requiring attention by a physician.

It has recently become known that the cervix, or mouth of the womb, undergoes cyclical changes which afford a clear and positive indication of the relatively short and fertile period which occurs during each complete menstrual period. The fertile period is indicated by the secretion of a clear mucus which, when tested for the presence of glucose, gives a strong color reaction, this color reaction occurring on the day of ovulation. The recognition of this secretion and the application of the test for the presence of glucose, which afford a highly useful and valuable test for fertility, were heretofore possible only in conjunction with a visit to the doctor's office or a visit of the doctor to the home of the patient. Furthermore, utilization of this test with previously known equipment necessitates daily examination by a doctor for a number of days, a procedure which is not practical for general use and which is not generally acceptable to the patient due to the intimate nature of the examination. Furthermore, no means have been available to enable a woman, after marital relations, to assist the sperm to reach the entrance of the uterus, since she cannot see the "os," the opening from the cervix into the womb. In the past, only a physician equipped with a vaginal speculum and a light has been able to accomplish any of these testing and manipulative techniques. On the other hand, the very nature in timing of these intimate inspections makes it highly possible that the woman herself be able to perform them on her own body at any time that she does in the privacy of her own home.

Devices for auto-vaginoscopy have been known in the prior art. In previously known devices, where illumination has been provided, it has been customary to attach a lamp to a relatively long stem or support member, this

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support member also carrying an adjustable mirror. In previously known devices of this kind, the construction has been such that the entire apparatus is assembled at the time of insertion. To insert the long unit, it has usually been necessary to use an obturator, which makes the use of the instrument relatively clumsy and complicated. Furthermore, with previously known devices of this kind it may be difficult to obtain the requisite alignment between the light source, the mirror, and the inserted portion of the speculum. It is difficult to predict, in advance, the angular position which afford the most effective use of the speculum after insertion. Consequently, it is desirable to afford an effective and convenient means for adjusting this alignment after insertion of the speculum; for full utility, this adjustment should be possible over relatively small angular increments. An improved construction is described and illustrated in my co-pending application Serial No. 811,074, filed May 5, 1959, now abandoned. However, even this arrangement is subject to some of the difficulties noted hereinabove.

It is a principal object of the present invention, therefore, to provide a new and improved device for internal inspection of the vagina which is effective to overcome or minimize the above-noted difficulties and disadvantages of previously known devices.

A more specific object of the invention is to provide a new and improved device for auto-vaginoscopy which comprises an optical unit that is removably mounted upon the inserted portion of a speculum, removal and remounting of the optical unit being a quite simple and convenient operation.

Another object of the invention is to provide a new and improved device for internal inspection of the vagina which provides for mounting of an optical unit, comprising a light source and a mirror, on the exposed end of a tubular speculum and which permits relative rotation between the optical unit and the speculum without requiring demounting of the optical unit from the speculum.

A further important object of the present invention is to provide a new and improved device for auto-vaginoscopy which is completely self-contained and requires no connection to any kind of external power supply.

A particular object of the invention is to provide a new and improved apparatus for auto-vaginoscopy which eliminates completely any need for the use of an obturator or other auxiliary device in insertion and use.

A specific object of the invention is a new and improved apparatus for internal inspection of the vagina, comprising a speculum, which includes effective means for identifying the angular orientation of the speculum within the vagina.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration show preferred embodiments of the present invention and the principles thereof and what is now considered to be the best mode contemplated for applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

In the drawings:

FIG. 1 is an elevation view of a device for internal inspection of the vagina and includes a simplified anatomical illustration depicting the device in position of use;

FIG. 2 is a plan view of the device of FIG. 1;

FIG. 3 is an end elevation of the device for auto-vaginoscopy of FIG. 1;

FIG. 4 is a sectional elevation view taken approximately along line 4-4 in FIG. 3;

FIG. 5 is an end elevation view, similar to FIG. 3, of another embodiment of the invention;

FIG. 6 is a sectional elevation view, similar to FIG. 4, taken approximately along line 6—6 in FIG. 5;

FIG. 7 is an end elevation view, similar to FIG. 3 of a further embodiment of the invention;

FIG. 8 is a sectional elevation view taken approximately along line 8—8 in FIG. 7;

FIG. 9 is an end elevation view of another embodiment of the invention, using a magnetic coupling structure; and

FIG. 10 is a sectional elevation view taken approximately along line 10—10 in FIG. 9.

FIGS. 1—4 afford a substantially complete illustration of one embodiment of the present invention. In FIG. 1, the device 20 is shown in the normal position of use. To assist in understanding of the invention, FIG. 1 also includes an illustrative and simplified showing of the anatomy of the user, including the bladder 21, the symphysis 22, the rectum 23, the uterus 24, and the vagina 25. The cervix is generally indicated by the reference numeral 26, the "os" or opening from the cervix into the uterus being designated by the reference numeral 27. Thus, FIG. 1 shows the relative positions of these portions of the anatomy of an adult female with respect to the device 20 when the latter is being used.

The device 20 comprises a tubular speculum 31 which in many respects is substantially similar to the conventional tubular speculum used for vaginal medical examination and sometimes referred to as a Ferguson speculum. It comprises, essentially, a main tubular portion having a diameter sufficiently large to dilate the vagina, and is somewhat longer than the length of the vagina. The interior or insertion end 32 of the speculum is not perpendicular to the axis of the tube, but rather is located in a plane that is inclined approximately 30° from the normal to the axis. The opposite or external end of the speculum member 31 terminates in an annular flange or lip 33. It will be recognized that, as thus far described, the tubular speculum member 31 does not differ substantially from the conventional Ferguson speculum.

The device 20 further includes an optical unit 34 comprising a base member or housing 35. A relatively small electrical lamp 36 is mounted in a suitable socket 37 (FIG. 4) within the housing 35. A hood portion 38 covers the interior end of the lighting unit 36, 37. A mirror 39 is pivotally mounted on the hood portion 38 of the base member 35 at the end of the hood opposite the lamp 36. The mirror 39 can be pivoted to any desired angle relative to the base member 35, from a completely depressed position 39A on the top of the hood 38 to a position 39B displaced almost 180° from the position 39A. In actual use, the mirror 39 may require adjustment within a relatively narrow range closely adjacent the position shown in solid lines in FIG. 1.

The optical unit 34 also includes a suitable power supply and operating circuit for the lamp 36. Thus, for example, a pair of dry-cell batteries 41 of the kind used in pencil-size flashlights may be mounted within the base 35 as shown in FIGS. 2—4. Mounting of the batteries within the base member 35 may be accomplished by conventional holding clips and electrical connectors of the kind employed in relatively small flashlights and similar devices. The connecting circuit for the batteries and the lamp 36, which is not shown in detail in the drawings, preferably includes a momentary contact pushbutton switch 42, although other types of switch may be employed if desired. Instead of the conventional dry-cell batteries 41, it may be desirable to use two or more mercury cells as the power supply for the lamp 36. Mercury cells are advantageous, in this instance, in that they are very small in size, as compared with conventional flashlight batteries, and they present little or no possibility of leakage damage to the optical unit.

In the device 20, means are provided for mounting the

optical unit 34 on the speculum 31 of the device. In the construction shown in FIGS. 1—4, the mounting means comprises an inverted substantially U-shaped mounting member 43 which is affixed to and forms an integral part of the base member or housing 35. The mounting member 43 is provided with a re-entrant flange 44, the configuration of the flange being best illustrated in FIGS. 3 and 4. As shown therein, the upper portion of the flange 44, particularly as illustrated in FIG. 3, is of semicircular configuration, the flange being left open in the lower portion of the mounting member 43 to permit insertion therein of the flange 33 on the speculum 31. Thus, the flange 44 on the mounting member 43 engages the peripheral portion of the speculum flange 33 on the upper half thereof, the remaining portion of the flange 33 not being engaged by the flange 44. In some instances it may be desirable to mount a spring clip or detent member 49 on the optical unit in position to engage the lower portion of the flange 33 on the speculum 31. However, this detent is not essential.

Preferably, the auto-vaginoscope 20 also includes a manipulating member or handle member 46 which is affixed to the speculum 31 closely adjacent the flange end 33 of the speculum. The handle member 46 is provided with an indexing projection 47 which is utilized to indicate the angular orientation of the speculum 31 within the vagina, as described more fully hereinafter. Of course, it is necessary to provide some means for replacement of the batteries 41 in the base member or housing 35; in the embodiment of FIGS. 1—4, this means comprises the removable cover 48 which forms the bottom panel of the housing.

When the auto-vaginoscope 20 is to be used, the speculum 31 is first inserted in the vagina 25 to the position shown in FIG. 1. At the outset, and because the speculum itself is quite short in length, the user can initiate insertion with the speculum held downwardly, the tip portion 32 entering the opening of the vagina. In this manner, the speculum can be used to press the posterior wall of the vagina toward the rectum 23. This wall gives relatively easily; the speculum is then straightened and inserted by gentle rotating movement. Thus, insertion of the speculum is accomplished in essentially the same way a physician would insert a tubular speculum into a patient. There is no need to use an obturator or any other auxiliary device to facilitate insertion of the speculum. After the speculum has been inserted, the optical unit 34 is easily and conveniently mounted upon the flanged end 33 of the speculum simply by pressing the flange 44 of the mounting member 43 downwardly over the speculum flange 33.

While the method of insertion described immediately hereinabove is in many respects the most practical, the device 20 can also be inserted with the optical unit 34 mounted on the speculum 31. This can also be done without the use of an obturator, since the complete assembly is still relatively short in length.

Normally, the optimum orientation for use of the speculum 31 is as shown in FIG. 1, with the slant end 32 of the speculum extending downwardly and inwardly within the vagina. During insertion, as noted hereinabove, it is usually necessary or desirable to rotate the speculum. Consequently, the index projection 47 is of substantial assistance in orientation of the speculum, during use, since it gives an immediate indication of the angular position of the speculum. Moreover, the handle or manipulation member 46 affords a convenient and effective means for rotating the speculum after the optical unit 34 has been mounted thereon. This is an important feature of the invention because, in many instances, it may prove necessary to change the orientation of the speculum 31 within the vagina by rotating it to at least some extent in order to permit a complete inspection of the vagina and the cervix. Of course, the handle member 46 need not comprise a solid disc, as shown in the drawings. It may

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be in the form of a rim supported on a plurality of spokes, or may be provided with an enlarged peripheral flange or rim to facilitate engagement by the user's fingers if desired. In fact, a plurality of individual spoke-like members, not connected by a rim, may be utilized, if preferred, since the basic utility remains the same.

Because the optical unit 34 is rotatably mounted on the speculum 31, convenient and accurate alignment of the optical unit to afford a clear and complete view of the entire vagina is greatly facilitated. It is not necessary for the user to twist and turn her body or head in order to make a complete inspection of the interior of the vagina. Furthermore, there is no need to remove the optical unit 34 at any time during use of the instrument 20 in order to allow a change in angular orientation of the speculum 31. Preferably, the speculum 31 is formed from a transparent material in order to provide for complete inspection of the walls of the vagina throughout its length. A glass speculum may be used, but a transparent plastic speculum is preferred because it is easier to hold a member constructed from plastic to close dimensional tolerances and the mounting of the handle member 45 may be more conveniently and effectively accomplished with a plastic speculum. In view of the circumstances under which the instrument 20 may frequently be used, it is important to note that the optical unit 34 can be quickly and conveniently mounted on the speculum, and can be removed therefrom, in the dark and by the sense of touch alone, without requiring observation at any time.

After the device 20 has been used, the tubular member or speculum 31 is inevitably found to be soiled by vaginal secretions. The optical unit 34 and the mounting member 43, on the other hand, remain clean, since these parts of the instrument 20 are not inserted within the body. This condition is easily maintained, and full advantage may be taken thereof, by removing the optical unit 34 from the speculum member 31 before the speculum is removed from the vagina. In this way, sterilization of the optical unit may be eliminated and cleaning is greatly reduced, as compared with that necessary for the speculum itself. The self-contained power supply and lamp of the optical unit 34 make the instrument 20 much more convenient, in use, than any apparatus requiring connection to an external power supply. To assist in keeping the optical unit 34 clean, it is preferred that the base member be formed from a relatively smooth-surfaced plastic or similar material. Moreover, it should be noted that the lamp 36 is located in alignment with one side of the opening in the speculum 31, when the optical unit 34 is in mounted position, thereby facilitating effective use of the instrument 20. During use, of course, the mirror 39 can be pivoted to any desired position to give the best view of the interior of the vagina. When not in use, the mirror can be folded down to either of the positions 39A and 39B.

FIGS. 5 and 6 illustrate a device 60 for auto-vaginoscopy which comprises another embodiment of the invention and which in many respects is substantially similar to the device 20 of FIGS. 1-4. Thus, the device 60 comprises a substantially tubular speculum 61 which is essentially similar in construction to the speculum 31 described hereinabove. Instead of the conventional flared flange, however, the speculum 61 is provided with a flange 62 having a cylindrical clutch surface 63 at the peripheral portion thereof. As before, the speculum is provided with a handle or manipulation member 46 that is substantially larger than the flange 62 to provide a convenient means for rotation of the speculum when it is being used. The manipulation member 46 is shown only in phantom in FIG. 5 in order to permit more effective illustration of the flange 62 and other parts of the device 60. In this regard, it should be noted that the manipulation member 46 is omitted in FIG. 3 for the same reason.

In addition to the speculum 61, the device 60 also includes an optical unit 64 which in many respects is essen-

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tially similar to the optical unit 34 of the previously-described embodiment. Thus, the optical unit 64 includes the base member 35 which is utilized to support the lamp 36, shielding for the lamp being provided by the hood 38. The mirror 39 is again mounted on a suitable hinge at the end of the hood 38 opposite the lamp 36. The housing or base member 35 encompasses one or more batteries for energizing the lamp 36, the control circuit including the switch 42.

In the embodiment of FIGS. 5 and 6, the optical unit 64 is provided with a mounting member 65 which is generally annular in configuration and which includes a projecting flange or rim 66 that engages the clutch surface 63 of the speculum flange 62. Preferably, the fit between the mounting member flange 66 and the speculum flange surface 63 is a relatively tight one, particularly when the optical unit 64 is pushed on to the speculum flange 62 as far as possible. Thus, the diameter of the internal opening in the flange 66 may be made slightly larger at the entrance to permit relatively easy rotation between the speculum and the optical unit when the two flanges 62 and 66 are only lightly engaged. The difference in diameter may be gradual, or the engaging surfaces may be stepped slightly (FIG. 6). When the two flanges are pressed tightly together, a relatively strong frictional connection is established between the two so that the optical unit remains in fixed angular position relative to the speculum. In effect, therefore, the surface 63 on the speculum flange and the inner surface of the mounting member flange 66 form a simple yet effective frictional clutch. If desired, the flange 66 may be provided with a relatively small re-entrant portion to engage the rear surface of the speculum flange 62 in a snap fit and thereby provide a more positive connection between the optical unit and the speculum in this embodiment of the invention. However, this is not essential and a straight frictional coupling of the kind shown in the drawings is almost equally effective and convenient and, in some instances, may be preferred because it permits easier removal of the optical unit from the speculum.

Operation of the auto-vaginoscope 60 is essentially the same as described hereinabove in connection with the device 20. Thus, in normal operation, it is usually preferred that the speculum 60 first be inserted, after which the optical unit 34 may be mounted on the speculum. With the optical unit in place, and using the illumination provided by this unit, accurate orientation of the speculum may be readily achieved and the entire interior of the vagina may be quickly and conveniently inspected by the user, by means of the mirror 39. Any minor misalignment of the auto-vaginoscope 60 may be quickly and effectively corrected by rotating the speculum 61 relative to the optical unit 64 but without disengaging the optical unit from the speculum. Thus, the final adjustments can be made with the light source and the mirror maintained in essentially the same position as they occupy in the final use of the instrument. As before, the manipulator member or handle 46 affords a convenient means for rotating the speculum. The index element 47 on the member 46 provides an effective means for determining the orientation of the internal portion of the speculum.

In either of the auto-vaginoscopes 20 and 60, which are generally similar to each other, individual segmental flanges or clips may be employed instead of the relatively long and continuous flanges shown on the mounting members 46 (FIG. 3) and 65 (FIG. 5). In some instances, it may also be desirable to employ a universal pivotal mounting for the mirror 39 instead of the simple hinge shown in the drawings. Thus, for example, it might be desirable to utilize a ball-and-socket joint instead of the hinge mounting illustrated for the mirror. However, the operating value of a universal joint of this kind is open to some doubt, and the hinge construction shown may be somewhat better in affording a strong mounting for the

mirror, particularly when the mirror is folded flat against the housing 35 when the instrument is not in use.

FIGS. 7 and 8 illustrate yet another instrument 70 for auto-vaginoscopy which is substantially similar to the previously-described embodiments but which employs a different mounting arrangement. The instrument 70 includes a substantially tubular speculum 71 having an external mounting flange 72 that is provided with a plurality of short screw-thread elements 73. Preferably, the speculum 71 is provided with a handle or manipulation member 46 which is substantially larger than the flange 73 and which may be employed to rotate the speculum. Furthermore, the manipulation member 46 is preferably provided with an indexing element 47 that can be detected either by sight or by sense of touch.

The optical unit 74 in this embodiment of the invention again comprises a base member 35 which is utilized as a support for the lamp 36. A hood 38 is provided for the lamp and a suitable mirror 39 is adjustably mounted on the base member to afford a means for viewing the illuminated interior of the speculum. Furthermore, a control switch 42 is provided for the lamp 36; as before, the power supply includes suitable batteries mounted within the base 35.

In the optical unit 74, the base member 35 is provided with a mounting member 76 that is of generally annular configuration. Mounting member 76 is provided with a flange portion 77, the interior surface of the flange portion 77 including a series of relatively short grooves for engaging the thread member 73 on the speculum flange 72. Thus, the grooves 78 in the mounting flange 77 and the thread members 73 on the speculum flange are complementary to each other and afford an interrupted-thread coupling between the optical unit and the speculum in the instrument 70.

Basic operation of the instrument 70 is not significantly different from the two embodiments described hereinabove except for a minor difference occasioned by the change in the mounting means or coupling between the speculum and the optical unit. Thus, it is usually preferred that the speculum 71 first be inserted; after which the optical unit 74 can be loosely mounted on the speculum simply by bringing the flange 77 into engagement with the speculum flange 72. To adjust the relative angular positions of the speculum and the optical unit, in the final adjustment of the speculum, the speculum can be rotated in a counterclockwise direction, as viewed in FIG. 7. Rotation in this direction, relative to the optical unit 74, does not engage the complementary thread coupling elements 73 and 78. When the approximate final position for the speculum and the optical unit is reached, a relatively short rotation of the speculum in the opposite direction, or a corresponding rotation of the optical unit, serves to engage the interrupted-thread coupling and effectively locks the two major elements of the instrument together. To release the optical unit from the speculum, it is again only necessary to rotate the two relative to each other through a small arc in order to release the interrupted-thread coupling. This embodiment has the advantage of providing a slightly more rigid coupling between the two units than is normally possible with the embodiment of FIGS. 1-4, although there is little difference in this regard as compared with the embodiment of FIGS. 5 and 6. On the other hand, the finite number of interrupted-thread coupling elements may make the adjustment of the device 70 somewhat more critical, although this factor is easily and effectively minimized by providing a substantial number of thread elements in the coupling connection.

In FIGS. 9 and 10 there is illustrated an additional embodiment of the invention comprising an auto-vaginoscope 80. The instrument 80 includes a tubular speculum 81 which is substantially similar to those described hereinabove insofar as the main portion and the internal end

of the speculum are concerned. However, the speculum 81 is provided with a mounting member 82 which is not formed from a transparent plastic, glass, or any of the other preferred materials for the speculum 81. Instead, the mounting member 82 is a ring fabricated from a magnetic material, preferably a magnetic form of stainless steel or other corrosion-resistant magnetic metal. The mounting member 82 is embedded in an annular member 83 that extends outwardly of the main body of the speculum 81. Thus, the member 83 serves as a handle or manipulation member and also as a support for the magnetic mounting ring 82. The member 83 is preferably provided with an indexing element 47 to indicate the angular orientation of the speculum 81, and is provided with a locating flange 86. Preferably, the outer or face surface of the magnetic ring 82 is substantially planar in configuration.

The optical unit 84 in this embodiment of the invention comprises a base member 89 which supports a lamp 36. As before, a suitable hood 38 may be provided for the lamp and the mirror 39 is mounted on the base member 89 in adjustable position relative to the lamp. In this instance, however, the power supply for the lamp 36 is not mounted directly on the base 89. Instead, the lamp is connected to a separate battery pack 90 by an electrical circuit comprising a control switch 91. The switch 91 and battery pack 90 are preferably combined in a single small, compact unit. Moreover, the mounting for the mirror 39, in this instance, permits complete folding of the mirror to a storage position flat against the base member 89 as indicated by dash outline 39C.

The mounting means for mounting the optical unit 84 on the speculum 81 comprises a mounting member 85 that is affixed to and projects outwardly of the housing or base member 35. The mounting member 85 is engaged by the flange 86 on the member 83 of the speculum. The flange 86 is merely a locating flange, in this instance, and does not provide a frictional or other mounting engagement between the optical unit and the speculum. Instead, the two units are held together by means of a plurality of magnets 87 that are mounted within the annular mounting member 85 in facing engagement with the magnetic ring 82 on the speculum. The magnetic coupling between the magnets 87 and the ring 82 is sufficient to hold the optical unit 84 in operating position. On the other hand, the magnets do not present any substantial resistance to rotational movement of the optical unit and the speculum 81. Thus, with this mounting arrangement, adjustment of the two main units of the instrument 80 may be conveniently and accurately accomplished without demounting the optical unit 84 or disengaging it in any way. On the other hand, when it is desired to separate the two units, only a relatively small force need be exerted to pull them apart. Of course, the face surfaces of the magnets 87 are preferably aligned in a common plane to provide a uniform engagement with the face surface of the magnetic ring 82 to permit relatively smooth rotation of the optical unit with respect to the speculum. It may be desirable to use magnets which are magnetized in a direction parallel to the axis of the speculum, with alternate north and south poles facing the flange 82. If this is done, the magnetic circuit is completed by an annular ring 88 connecting the bases of the magnets.

By using the separate power supply 90, 91, the total weight of the optical unit may be reduced to some extent, which may be desirable in reducing stress on the coupling between the speculum and optical unit. On the other hand, the magnetic coupling shown in FIGS. 9 and 10 can also be used with a self-contained power supply for the optical unit, as described in the embodiments of FIGS. 1-8. The separate battery pack could also be utilized in the devices of FIGS. 1-8, although the self-contained structure is usually preferable because it is more compact and may be less complicated to use.

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From the foregoing description of several embodiments of the invention, it can be seen that it enables a woman to make complete and effective personal inspections without requiring repeated visits to a doctor and without requiring any assistance from any other person. Because each of the embodiments provides for effective rotational adjustment of the speculum and the optical unit, without removing the optical unit from its operating position, accurate alignment of the speculum is readily possible. This is true even though it may be necessary to rotate the speculum during a given inspection or other use of the speculum in order to achieve optimum effects. The speculum is of substantial value in detecting and treating abnormal conditions and also is a highly useful instrument when employed in conjunction with suitable tests to determine the exact day of ovulation. Of particular importance, is the fact that the speculum can be easily and conveniently used in a completely darkened room and that the only illumination necessary is provided by the self-contained optical unit of the speculum itself.

Hence, while preferred embodiments of the invention have been described and illustrated, it is to be understood that they are capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A device for internal inspection of the vagina comprising: a tubular speculum, for insertion into the vagina, having an enlarged flange at one end thereof; self-contained optical means comprising a base member, a light source mounted on said base member and comprising a lamp, at least one battery, and a connecting circuit between the lamp and the battery, and a mirror mounted on said base member in adjustable relation to said lamp; and means removably mounting said optical means on said speculum flange but permitting rotational movement of said speculum relative to said optical means without requiring demounting of said optical means, said mounting means including a mounting member of substantially U-shaped configuration affixed to said base member and having a substantially semi-annular re-entrant flange for engaging the speculum flange.

2. A device for internal inspection of the vagina comprising: a tubular speculum, for insertion into the vagina, having an enlarged flange at one end thereof; optical means comprising a base member and a light source and a mirror mounted on said base member in adjustable relation to each other; and mounting means removably mounting said optical means on said speculum flange but permitting relative rotational movement between said speculum and said optical means without requiring disengagement of said optical means from said speculum, said mounting means comprising a mounting member affixed to and projecting from said base member, a re-entrant flange on said mounting member for engaging a fractional portion of said speculum flange, and a releasable detent, mounted on said base member, for engaging another portion of said speculum flange to maintain the speculum flange in engagement with the mounting member flange.

3. A device for internal inspection of the vagina comprising: a tubular speculum, for insertion into the vagina,

having an enlarged flange at one end thereof; optical means comprising a base member and a light source and a mirror mounted on said base member in adjustable relation to each other; and mounting means removably mounting said optical means on said speculum flange without requiring visual observation of the speculum or optical means, said mounting means comprising a mounting member affixed to and projecting from said base member, at least one re-entrant clip-like flange on said mounting member for engaging a fractional portion of said speculum flange, and a releasable detent, mounted on said base member, for engaging another portion of said speculum flange to maintain the speculum flange in engagement with the mounting member flange.

4. A device for internal inspection of the vagina comprising: a tubular speculum, for insertion into the vagina, having an enlarged flange at one end thereof, the other end of the speculum terminating in a plane inclined at a predetermined angle to the axis of the speculum; a self-contained optical unit comprising a base member, a light source mounted on said base member and comprising a lamp, at least one battery, and a connecting circuit including a switch interconnecting the lamp and the battery, and a mirror mounted on said base member in adjustable relation to said lamp; means releasably mounting said optical unit on said speculum flange, said mounting means comprising a mounting member affixed to said base member of said optical unit and engageable in gripping relation with a major peripheral portion of said speculum flange, by linear relative movement therebetween, without requiring visual observation thereof, said mounting means permitting rotational movement of said speculum relative to said optical unit without requiring disengagement of said base member from the speculum flange; an annular manipulation member affixed to said speculum adjacent said flange to afford a means for rotating the speculum, when in position of use, independently of rotation of the optical unit, said manipulation member extending outwardly of the speculum flange and the mounting means; and indexing means on said manipulation member for indicating the angular orientation of the speculum.

5. A device according to claim 4 in which the mounting member is of annular configuration having an inner surface frictionally engageable with the periphery of said speculum flange, said flange and said mounting member together forming a friction clutch.

6. A device according to claim 4 in which the mounting member comprises a substantially U-shaped re-entrant flange engaging the speculum flange.

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