

July 25, 1950

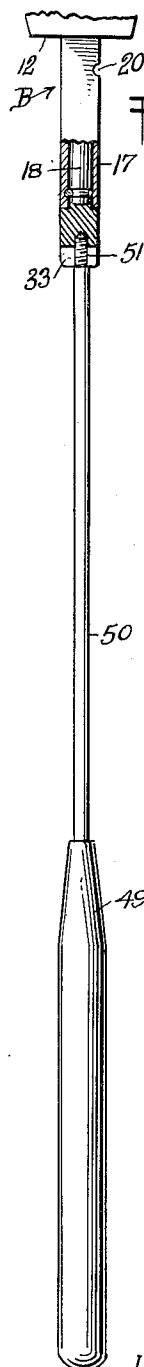
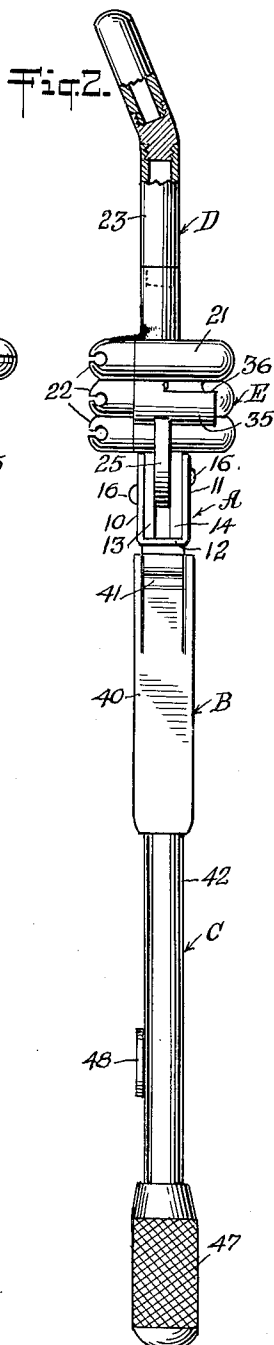
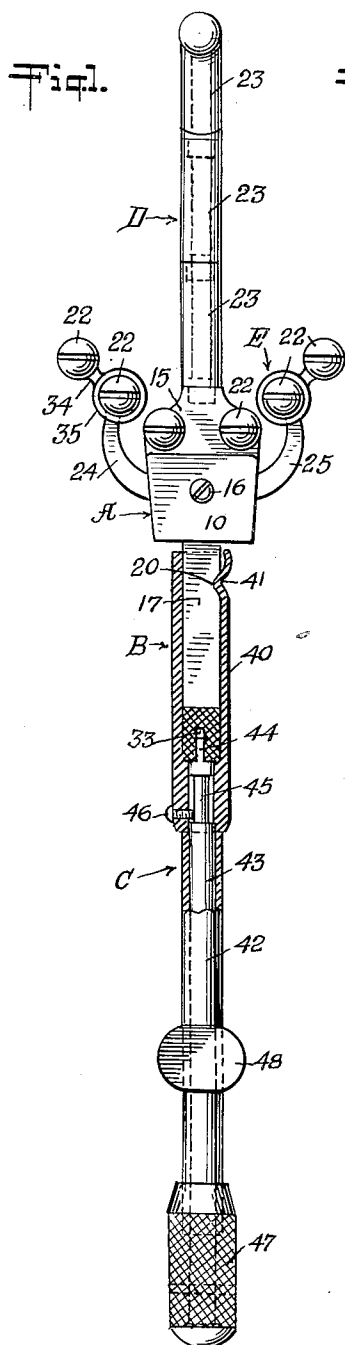
B. F. SCHUTT

2,516,261

CERVICAL UTERINE APPLICATOR

Filed May 21, 1948

2 Sheets-Sheet 1



INVENTOR.

Bernhard F. Schutt

BY

Munn, Liddy & Glaccum
Attorneys

July 25, 1950

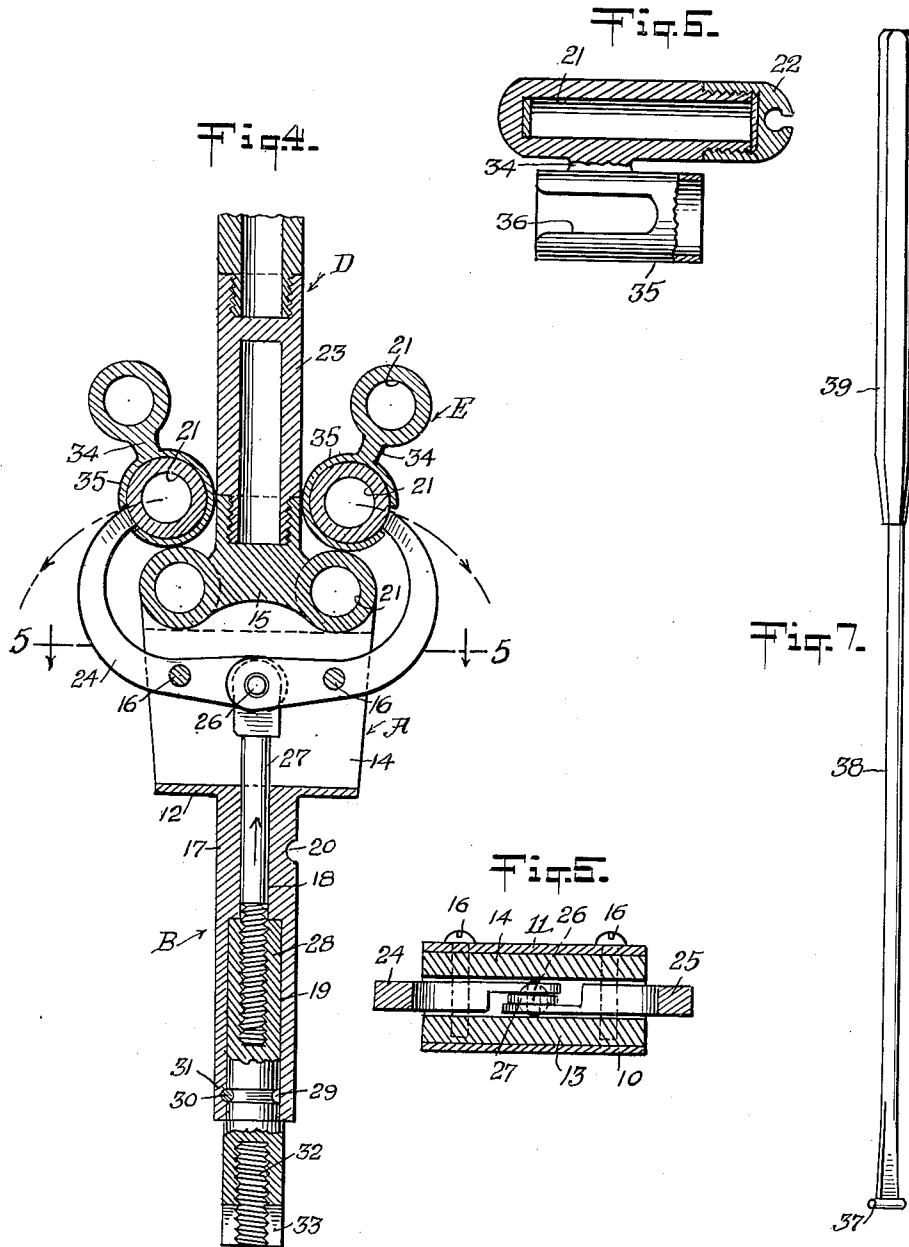
B. F. SCHUTT

2,516,261

CERVICAL UTERINE APPLICATOR

Filed May 21, 1948

2 Sheets-Sheet 2



INVENTOR.

Bernhard F. Schutt

BY

Munn, Liddy & Glassum
Attorneys

UNITED STATES PATENT OFFICE

2,516,261

CERVICAL-UTERINE APPLICATOR

Bernhard F. Schutt, Brooklyn, N. Y.

Application May 21, 1948, Serial No. 28,300

9 Claims (Cl. 128-1.2)

1

This invention relates to a new and useful improvement in cervical uterine applicators and has particular reference to one in which body passages are to be treated with radioactive substances.

An object of the invention is to provide a simple, efficient device which can be introduced into the body cavity without great discomfort and then be readily expanded to bring the operative substance into desired adjacent relation to the surfaces to be treated.

Another object is to provide a device in which the portions of the device in which the active substance is contained are made sectional so that greater or less quantities of the material may be used and spread over greater or less areas of the body passages being treated.

A still further object is to provide a device in which the expandable elements can be quickly and easily moved to advance them to operative position and to retract them as easily when desired.

Still another object is to provide a device in which the withdrawal of the device from the body passage can be effected with a minimum danger of contamination of the operator and the capsules containing the active material may be filled and emptied with a minimum of risk to him.

Further and more specific objects, features and advantages will more clearly appear from a consideration of the detailed specification hereinafter set forth, especially when taken in connection with the accompanying drawings which illustrate present preferred forms which the invention may assume and which form part of the specification.

In brief and general terms the invention concerns a narrow flat head with a forwardly extending, tubular, sectional applicator rod in which active material may be contained, and a rearwardly extending shank or hollow stem to which an operating handle is removably connected. On the head are disposed certain fixed capsules containing active material and certain movable capsules moved on pivoted arms which can be operated by means extending through the hollow stem from the outer end of the handle so that the arms supporting the movable capsules may be swung out away from the axis of the device or swung closely adjacent thereto so that the device may be easily inserted and yet the active material is easily brought into contact with the surfaces within the body passage to be treated. In another particular the invention

2

concerns the provision of extra or additional capsules provided with attached sleeves to be slipped over adjacent capsules so that greater numbers of capsules may be added to the movable capsule unit as desired.

A further feature is to provide simple means whereby the inserted device may be removed by hand without danger of contamination to the operator and the caps of the capsules likewise may be removed without the hands of the operator coming too near the radio-active material.

The present preferred forms of the invention are illustrated in the drawings, of which—

Fig. 1 is a plan view of the device, with certain parts in section;

Fig. 2 is a side elevation of the device;

Fig. 3 is a partial side elevation of the device with the attachment for removing it without danger of contamination to the operator;

Fig. 4 is a partial enlarged longitudinal section of the device;

Fig. 5 is a vertical section taken on the line 5-5 of Fig. 4;

Fig. 6 is a side view, partly in section, of one of the capsules with its attachment sleeve; and

Fig. 7 is a side elevation of the tool for removing the caps of the capsules without danger of contamination to the operator.

Referring now merely to the specific forms of the invention shown in the drawings, it is to be noted that it generally comprises a head A, a shank B, a removable handle C, a forward applicator stem D, and a series of capsules E, some of which are movable with respect to the axis of the device.

The head A is comprised of two interleaved U-shaped plates, one having spaced legs 10 and 11 and base 12, and the other having spaced legs 13 and 14 and base 15. As seen in Fig. 2, the legs are interleaved and connected by screws 16. To the base 12 is connected a hollow shank 17 preferably square in section having a small bore 18 adjacent and leading to the space between the legs of the U-shaped plates and also with a connecting outer larger bore 19 extending to the outer end of the shank 17. One side wall of the shank near the base 12 is provided with a transverse notch 20.

The base 15 is provided with two capsules fixed thereto on opposite sides thereof and comprising tubular elements 21 and removable screw caps 22. These are disposed with their axes at right angles to the longitudinal axis of the device, and disposed in a vertical plane when the device is

gripped in the hand of the operator with the series of capsules generally disposed in a horizontal plane. The base 15 also is provided with a forwardly extending applicator stem which is formed of a series of screw engaged hollow sections 23 which may be filled with required dosages of radio-active material as desired. The number of sections thus connected is optional and depends upon the nature and physical conformation of the body passage being treated. It is seen that the end section is bent at an angle to the rest of the sections, but it may be straight or of any other conformation thus enabling an applicator stem of any desired shape to be built up.

Pivoted on screws 16 between the legs 14 on the head A are a pair of pivoted arms 24 and 25, the inner ends of which are joined loosely by a pin 26 to the apertured end of a slidable rod 27 which slides in the small bore 18 of the shank 17. The outer portion of this rod 27 is threaded to engage with a threaded bore in a sleeve 28 which is rotatably housed in the lower larger bore 19 of the shank 17. This sleeve 28 has an annular groove 29 therein to receive a pin 30 which rests partly in the groove 29 and partly in a notch 31 in the adjacent face of the shank so as to prevent longitudinal movement of the sleeve 28 but permit rotation thereof. The lower end of sleeve 28 extends below the end of shank 17 and has a separate threaded end bore 32 and a transverse groove 33 extending in from the outer end surface thereof.

On the outer ends of the arms 24 and 25 are fixedly mounted tubular capsule elements exactly similar to the ones described as mounted on the base 15 and numbered 21 and provided with removable screw caps 22. If it is desired to provide more capsules to the series than the fixed ones mentioned, the unit shown in Fig. 5 is provided. In this attachment there is the tubular capsule element 21 with its screw cap 22 and laterally connected thereto by a thin web 34 is an elongated collar 35 which at its lower end on one side thereof is provided with a slot 36 extending upward a suitable distance from the bottom of the collar side. This collar 35 is adapted as shown in Fig. 4 to be slipped over the adjacent capsule tube and the slot embraces the end of the arms 24 and 25 or the web 34 as the case may be. It is thus seen that as many capsule tubes may be added in series as desired to give the required amount of radio-active treatment to smaller or larger areas of the body passage.

It is to be noted that the slots in the tops of the screw caps 22 of all the tubes 21 have a narrow outer end and an enlarged inner portion. This is to permit a similarly shaped end 37 of a tool shank 38 having a handle 39 to be laterally inserted in the slot in the screw cap to enable the cap to be unscrewed and lifted out without being touched by the hands of the operator. This is important in the handling of these capsules containing radio-active material as can be well understood.

In order to open and close the arms 24 and 25 to swing the capsules in and out with respect to the axis of the device, a hollow square sleeve 40 is adapted to be slipped over the shank or stem 17 and has a depressed rib 41 thereon to lie in the transverse notch 20 to latch the sleeve 40 on the shank 17. The outer portion 42 of this sleeve 40 is cylindrical in shape and houses a rotatable shaft 43, the upper end of which is flattened out as at 44 to form a key to fit into the transverse groove 33 in the lower end of the sleeve 28 previ-

ously mentioned. Just below the end of sleeve 28 the diameter of rod 43 is reduced as at 45 to form shoulders at the ends of this reduced portion and a set screw 46 extends into this portion to limit the longitudinal movement of the rod 43 with respect to and within the sleeve 42. The lower end of rod 43 extends below the lower end of sleeve 42 and has pinned thereon a knurled finger knob 47 which is hollowed out to embrace the lower end of the sleeve 42. The sleeve 42 near the knob 47 is provided with a flat finger grip 48 to enable the operator more certainly to manipulate the device when in his hands.

When the device is inserted into the body cavity to be treated, the handle sleeve 40 is pulled off and the device left in position for the requisite length of time. When it is desired to remove it, a tool shown in Fig. 3 is employed which comprises a handle 49, a long shank 50 and a threaded outer end 51 which is adapted to be screwed into the threaded bore 32 in the outer end of sleeve 28 above described. This tool can then be turned to swing the arms back toward the axis of the device so that the smallest width is presented for removal from the cavity as easy as possible. The length of the tool is such that the device can be manipulated and withdrawn without contamination to the hands of the operator and then dipped into a sterilizing solution while still connected to the tool.

It is clear from the detailed description thus above set forth that the operation of the device is as follows:

The sleeve 40 with its associated parts is slipped over the shank or stem 17 and latched in position as shown in Fig. 1. The knob 47 is moved forward until the key 44 engages the groove 33 in the outer end of the sleeve 28 whereupon the turning of the knob will move the rod 27 and pivot the arms 24 and 25. They may be swung one way or the other depending upon the way in which the knob is turned. For insertion of the device into a body passage the knob is turned to swing the arms in toward the axis of the device. When the inner limit of movement is reached the device is then inserted into the desired passage and the knob turned the other way to swing the arms out from the axis. The capsules on the arms and the fixed capsules on the head A are filled with required amounts of radio-active material and the sections of the stem D are likewise provided with such material in required amounts. The number of capsules desired to use are determined and if more than the fixed ones are needed, then additional ones are hooked on by means of the attachable unit shown in Fig. 6. The degree to which the arms are swung out after insertion depends, of course, upon the nature and physical construction of the body cavity to be treated, but it is to be seen that the swinging of the arms out to a desired degree will bring the active capsules close to the desired surface at regulated desired intervals. The forwardly extending stem D likewise is of determined length depending upon the circumstances of the part to be treated and may readily and easily be made longer or shorter; the end may be straight or curved as desired.

When the device is in position the sleeve and handle B and C are slipped off. After the requisite treatment time is over, the tool shown in Fig. 3 is inserted as described and turned in the proper direction to swing the capsule arms in toward the axis of the device after which it can be withdrawn while still on the end of the tool and dipped into a sterilizing solution while the hands of the oper-

ator are still such a distance away from the device as to be in no danger of contamination.

If at any time the caps 22 of the various capsules are to be removed so as to fill the capsules or to remove the active material therefrom, it is merely necessary to slip the lower end of the tool shown in Fig. 7 laterally into the slot in the tops of the caps and turn the tool which will unscrew the cap and permit it to be lifted out without the hands of the operator coming anywhere near the cap and thus avoid contamination.

While the invention has been described in detail and shown with respect to the accompanying drawing, it is not to be limited to such details, since many changes and modifications may be made in the invention without departing from the spirit and scope thereof. Hence, it is desired to cover any and all forms and modifications of the invention which may come within the language and scope of any one or more of the appended claims.

What I claim as my invention is:

1. An applicator which comprises a head, capsules fixed to said head on opposite sides of the longitudinal axis thereof, movable capsules associated with said head and disposed on opposite sides of the longitudinal axis thereof, arms pivoted on the head on which said movable capsules are mounted, and means extending into said head and engaging said arms to swing said arms toward and away from said head to selectively dispose said movable capsules.

2. An applicator which comprises a hollow head, a capsule fixed to said head, a capsule movable on said head, a hollow shank connected to said head, an arm within the head on which said movable capsule is mounted, and means manually operable and extending through said shank and into said head and connecting to said arm to move the capsule to and from the head.

3. An applicator which comprises a hollow head, a capsule fixed to said head, a capsule movable on said head, a hollow shank connected to said head, an arm within the head on which said movable capsule is mounted, a rod slidable within said shank and connected at one end to the arm, a sleeve within said shank and rotatable therein and embracing the lower end of said rod, and threaded means connecting the rod and the sleeve whereby the turning of the sleeve will longitudinally move the rod to swing the arm and the capsule thereon.

4. An applicator which comprises a hollow head, a capsule fixed to said head, a capsule movable on said head, a hollow shank connected to said head, an arm within the head on which said movable capsule is mounted, a rod slidable within said shank and connected at one end to the arm, a sleeve within said shank and rotatable therein and embracing the lower end of said rod, and threaded means connecting the rod and the sleeve whereby the turning of the sleeve will longitudinally move the rod to swing the arm and the capsule thereon, the lower end of the sleeve having a threaded bore and a transverse groove extending in from the end of said sleeve.

5. An applicator which comprises a hollow head, a capsule fixed to said head, a capsule movable on said head, a hollow shank connected to said head, an arm within the head on which said movable capsule is mounted, a rod slidable within said shank and connected at one end to the arm, a sleeve within said shank and rotatable therein and embracing the lower end of said rod, and threaded means connecting the rod and the sleeve whereby the turning of the sleeve will longitudinally move the rod to swing the arm and the capsule thereon, the lower end of the sleeve having a threaded bore and a transverse groove extending in from the end of said sleeve, a sleeve adapted to be slipped over said shank, a rotatable shaft within said last mentioned sleeve and manually turnable, and a flat key on the inner end of said shaft and adapted to engage the transverse groove whereby the turning of the shaft will turn the first-mentioned sleeve.

6. An applicator which includes a tool adapted to engage a screw cap and having a handle and long shank, the outer end of the shank having an enlarged transversely extending end to enter a similarly shaped slot in the screw cap whereby the cap may be turned and lifted without contact with the operator's hands.

7. An applicator which includes a capsule unit comprising a hollow capsule, and an associated collar disposed parallel therewith and connected to the capsule by a web, said collar having a slot in one side thereof extending upwardly from the bottom thereof.

8. An applicator which comprises a head, a capsule fixed to said head, an arm pivoted to said head for movement toward and away therefrom, a capsule mounted on the arm and means to swing said arm toward and away from the longitudinal axis of the head.

9. An applicator which comprises a hollow head, a capsule fixed to said head, an arm pivoted on said head for swinging movement to and from said head, a capsule on said arm and means extending into said head and associated with said arm and adapted when actuated to move said arm to and from the head as desired.

BERNHARD F. SCHUTT.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
834,261	Chambers	Oct. 30, 1906
842,631	Deperdussin	Jan. 29, 1907
1,109,072	Kozmowski	Sept. 1, 1914
1,262,732	Andrews	Apr. 16, 1918
1,406,509	Viol	Feb. 14, 1922
1,694,246	Boyne	Dec. 4, 1928
2,009,393	Failla	July 30, 1935

FOREIGN PATENTS

Number	Country	Date
303,035	Germany	Jan. 16, 1918
472,560	Great Britain	Sept. 27, 1937