

Feb. 24, 1931.

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1,794,296

SURGICAL INSTRUMENT

Filed Aug. 24, 1927

Fig. 1.

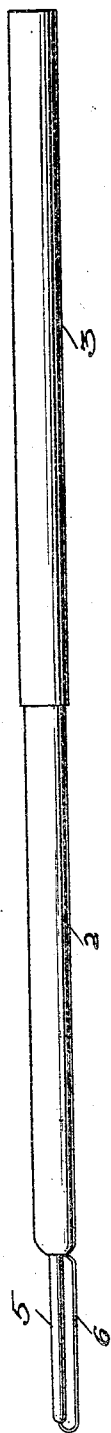


Fig. 2.



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SURGICAL INSTRUMENT

Application filed August 24, 1927. Serial No. 215,016.

This invention relates to an improvement in surgical instruments.

The object of the invention is to provide a suitable instrument for resection or surgical high frequency cutting in gynecological work. The operation of the surgical high-frequency machine is well known to those skilled in the art, as employing a special apparatus for generating an electrical wave form, known for its cutting characteristics.

The invention lies in the construction of the cutting instrument which is formed of a metal tube encased in an insulating tube approximately throughout its length, but having a metal sleeve at the inner or distal end, having electrical contact with the metal tube. A small silicon or other insulating tube is inserted into the outer or proximal end of the metal tube and receives the end of a tungsten wire in its outer end, said wire being bent back along the silicon tube in spaced-apart relation and is wound around the inner end thereof in electrical contact with the metal tube and is the cutting portion of the instrument. A metal electrode is placed upon the body of the person being operated on, which electrode is connected with the high frequency machine by a conducting wire. A second electrode is fastened to the arm of the operator and electrically connected with the other pole of the machine. When the operator grasps the metal sleeve of the instrument and applies said instrument at its tungsten wire end to the skin of the patient, an electrical circuit is completed through the cutting wire of the instrument, and as it moves into the skin the desired cut is made. Very slight pressure is required, there is practically no bleeding from the capillary vessels, and the cut is sterile because of the heat produced during said process.

The cutting instrument is suitable for coring out, for making deep incisions, for resecting growths, or for planing off thin layers from remaining pedicles.

In the accompanying drawings:

Fig. 1 is a side elevation of the cutting instrument; and

Fig. 2 is a longitudinal section thereof.

Only the instrument itself is illustrated in the drawings, since the high frequency machine with which it is designed for use is well known to those familiar with the art, although the manner of use will be described.

The body of the instrument is constructed of an inner metal tube 1, encased approximately throughout its length in a hard rubber or other insulating tube 2. The rubber tube 2 terminates slightly back of the inner end of the metal tube 1, leaving the inner or distal end thereof exposed, and a metal sleeve 3 is slipped over the rubber tube 2 and has portions thereof crimped inward as at 4 to fasten the metal sleeve to the metal tube 1, and make contact therewith. The outer or proximal end of the tube 1 receives the end of a silicon or other insulating tube 5. A good conducting wire 6, such as tungsten, has one end thereof received in the outer end of the silicon tube, and it extends back along and parallel with the latter, with its free end wrapped around the inner end of the silicon tube, within the end of the metal tube 1, as at 7, and making electrical contact with said tube.

The instrument is designed for use in gynecological work, and is adapted for making various incisions for coring out, for resecting growths, or for planing off thin layers from remaining pedicles. For instance, it has been found especially successful in the use of chronic endocervicitis, and its use will be described in this connection.

Innumerable methods of treatment have been advocated for the cure of chronic endocervicitis, varying from all kinds of local applications to amputation of the cervix. The aim of each has been the destruction or eradication of the diseased cervical mucous membrane and glandular structures, with simultaneous preservation of the musculature. To attain this ideal, the following requisites are desirable: (1) a procedure easily carried out by the clinician; (2) painless technic; (3) minimum destruction of uninvolved tissue; and (4) no sacrifice of occupational time on the part of the patient.

By the use of the specially designed instrument in connection with the surgical high

frequency machine, the mucous lining of the cervical canal and its glands can be cored out completely and quickly, without pain or discomfort to the patient. There is a prompt
5 subsidence of symptoms, elimination of the inflammatory process, and a normal appearance of the cervix within four weeks after the application. The instrument is operated from a high frequency machine in which there
10 is incorporated a special unit for generating an electrical high wave frequency with unusual power for cutting its way through tissue.

The patient is placed in the lithotomy position, and an illuminated vaginal speculum inserted to expose the cervix, which is then freed of all discharge. A metal electrode is placed on the abdomen and held firmly in place, being electrically connected with the
20 high frequency machine. A second electrode is attached to the right arm or wrist of the operator and connected with the other terminal of the high frequency machine. The instrument is grasped firmly in the right hand
25 about the metal sleeve. The tip of the instrument is held close to the external os and the foot switch closed, causing a burning or searing of the tissue. The silicon tube is passed into the cervical canal up to the internal os, and with a rotary motion making
30 an entire circle, the entire mucous membrane is cored out. The switch may then be released, cutting off the current, and the mucous membrane with its contained cervical
35 glands will be found adhering to the tungsten wire and the silicon tube. The operation takes only a few seconds, and the patient may then leave the table, with very simple after-treatment.

40 The patient suffers no pain, as a local anæsthetic is given, nor subsequent bleeding, and no menstrual disturbance follows the treatment. The mucous membrane and glandular structures of the cervical canal are
45 completely removed. The cervix need not be drawn down to the vaginal introitus by traction, thus avoiding the possibility of consequent retrodisplacement of the uterus. The cutting proceeds smoothly and is accompanied
50 by heat, thereby insuring asepsis. Tissue may be removed to any desired depth. There is no contraindication to repeated operations upon said tissues by this process and procedure.

55 The method may be used for removing tissue for microscopic examination, when dilation and trauma are inadvisable, or it is suitable for coring out, for making deep incisions,
60 for resecting growths, or for planing off thin layers from remaining pedicles.

Other insulators may be found suitable in place of the silicon and hard rubber in the tubes 5 and 2, and this is likewise true of the
65 tungsten conducting wire 6.

I claim:

1. A diathermic instrument including an exposed metal tube, an insulating tube extending outwardly from the end of the metal tube, a wire having an end thereof
70 received in the end of the insulating tube, said wire being bent back along the insulating tube approximately parallel therewith and being electrically connected with the metal tube.

2. A diathermic instrument including a metal tube, an insulating tube, extending outwardly from the end of the metal tube, a wire having an end thereof received in the end of the insulating tube, said wire being bent
80 back along the insulating tube approximately parallel therewith and being electrically connected with the metal tube, an insulating tube extending approximately throughout and surrounding the length of the metal tube, and a metal sleeve fitted over the last-mentioned insulating tube and being connected
85 with the metal tube.

3. A diathermic instrument comprising an electrode, an insulator projecting forwardly therefrom, and a wire having an end portion thereof fixed to said insulator and extending along and spaced from the same, the opposite end portion of the wire being
90 connected with the electrode.

4. A diathermic instrument comprising an insulator, a wire having an end thereof fixed to an end of the insulator and extending parallel with and spaced from the same, the opposite end of said wire being wound around
100 the end of the insulator, and an electrode receiving the end of the insulator with the wire wrapped therearound, and contacting with said wire.

In testimony whereof I affix my signature.
MORTIMER N. HYAMS, M. D.

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