July 17, 1923.

1,462,202

E. B. HOPPER

SURGICAL INSTRUMENT

Filed May 14, 1921

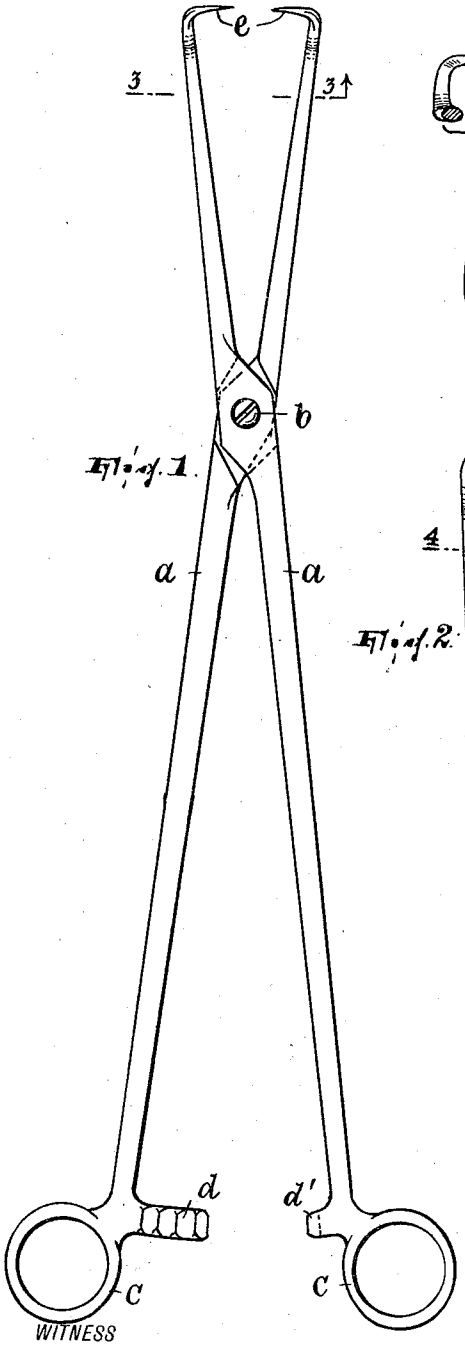

Fig. 1.

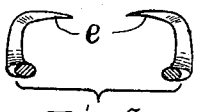

Fig. 3.

Fig. 4.

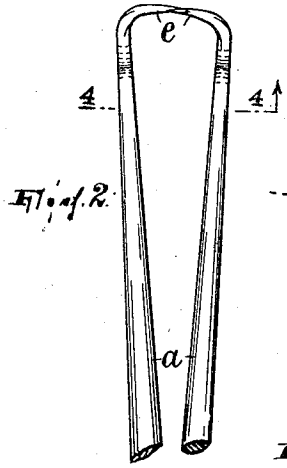

Fig. 2.

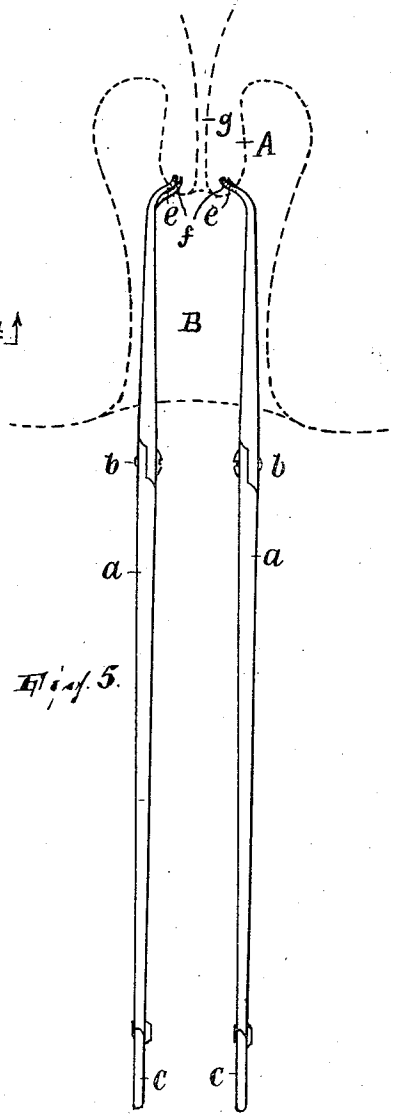

Fig. 5.

WITNESS

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UNITED STATES PATENT OFFICE.

EARLE B. HOPPER, OF RIDGEWOOD, NEW JERSEY.

SURGICAL INSTRUMENT.

Application filed May 14, 1921. Serial No. 469,661.

To all whom it may concern:

Be it known that I, EARLE B. HOPPER, a citizen of the United States, residing at Ridgewood, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Surgical Instruments, of which the following is a specification.

In operating on or treating the breeding tracts of certain female animals, as equines or bovines, and in the examination thereof for disease or pregnancy it is necessary to introduce an instrument into the vagina and grasp the projecting part of this tract called the os uteri, or mouth of the uterus, and draw it back so that any inflammation, seal, etc., can be examined and subjected to the appropriate operation or treatment and so that incidental rectal manipulation of the tract may be effected. The instrument, or cervical forceps, heretofore used for this purpose has long and broad coacting gripping jaws which, to improve the security against their slipping and so possibly injuring the tissues, are serrated on their coacting surfaces and have puncturing prongs each of which projects from one of said surfaces and enters a hole in the other. With this instrument it is impossible to grasp the os without injury to the glandular region thereof because of the relatively great area of said surface of each jaw and the gripping or clamping action of the jaws, the results of which—maceration of the tissues and contused wounds that are difficult to treat—are frequently much aggravated by the serrations and the prongs of the instrument. Besides, because its jaws are bulky they not only interfere with the surgeon's view but reduce the space otherwise available and so interfere with needed freedom in performing the operation, treatment or examination.

The object of this invention is to provide an instrument that can be used, without injury to the breeding tract, to effectively catch and draw toward the lips of the vulva and there hold the part to be examined or treated and that will interfere to the very least extent with the surgeon's view or with manipulations to be effected by hand or with other instruments.

In the drawing,

Figure 1 is a plan of the instrument, partly open;

Figure 2 is a plan of the catching or holding end portion of the instrument, closed;

Figures 3 and 4 are sectional views on lines 3—3 and 4—4 in Figures 1 and 2, respectively; and

Figure 5 shows, in connection with an anatomical diagram including the part to be treated, two of the instruments in operative position for drawing said part toward the mouth of the cavity containing it.

The instrument is of the forceps type and includes two forceps members *a a* which are pivoted together at *b* and have the usual thumb and finger loops *c*, affording handles, and click or ratchet means *d d'* to lock them in the closed position.

The free ends of the members extend appreciably from the pivot *b* and are slender and have a gradual taper to their tips *e*, which are sharpened or pointed.

Viewing the members in side elevation, that is, as seen in Fig. 5, their tip end portions are preferably bent off in the same direction. This is not indispensable, but on a view to Fig. 5 it will be seen that it will increase the space between the major portions of two such implements (two being usually used together) at the very outset of engaging them with or causing them to catch in the cervix A in the way to be explained; and this spacing occasionally is very advantageous, as in instances where the cervix cannot be drawn clear to the mouth of the vagina B.

Viewing the members *a a* in plan (Fig. 1) or section (Fig. 3 or Fig. 4) their tip end portions are bent toward each other, and so that, in the closed position of the members, they will more or less overlap, preferably with a wiping contact.

As indicated, usually the surgeon will use two of the implements, as in the case of the ordinary implement referred to, one being made to catch at one side and the other at the opposite side of the cervix. To engage each implement with the part A it is inserted into the vagina B with its members open and in position to bring its tips *e* (then relatively positioned as in Figs. 1 and 3) laterally against the part with a certain amount of pressure, whereupon the implement is closed to bring the tips together and so cause them to puncture the part conjointly, assuming overlapping relation to each other (as in Figs. 2 and 4). Both implements having thus been made to catch the part A, they are employed to draw it as far as possible toward the mouth of the

cavity B and hold it there while the treatment or operation is performed.

The value of the improved implement lies in the fact that since it exposes points rather than more or less extensive surfaces to the part to be treated in order to hold the same effectutally it can be made to catch the part well away from the region, as the exterior portion of the glandular region of a cervix, to which injury might be done, and that its hold is one incident to puncturing rather than to friction or surface contact and such necessary clamping pressure as in certain cases would be harmful. Also in the fact that since the members are slender in their catching end portions, and are without the more or less extensive and bulky jaws which characterize the ordinary implement, the implement obtrudes practically not at all in the way of the surgeon's vision or his access to the part. On account of the tips overlapping when in catching (puncturing) relation to the part A and then lying in contact with each other or close together they may be formed as slender as necessary, so as to reduce the size of the punctures they form as much as possible, and yet have ample strength because they will coact in assuming the strain.

Between the points where the tips *e* are bent off in the same direction (Fig. 5) and where they are then bent inward toward each other there is a slight bend (*f* in Fig. 5) in each in a direction away from the handle of the implement. When the surgeon positions the instrument with its tips against one side of the cervix as already explained, their points being then quite close together, he then by pressing against the opposite side of the cervix forces as it were a fold thereof between the points preparatory to closing the instrument and puncturing such fold. He should have means to gage the extent to which this fold is forced in between the points, for if it is forced too far in between them the points will puncture the canal of the cervix (marked *g* in Fig. 5). The tips themselves, specifically, the parts thereof which are bent toward each other, serve as a sort of gage for this purpose; but on account of the yielding nature of wall of the cervix I find the gaging effect is very much improved if the bends *f*, which are in effect gaging shoulders, are present.

Having thus fully described my invention, what I claim as new and desire to secure by Letters Patent is:—

A pair of surgical forceps comprising coacting members pivoted together and having coacting slender terminal portions adapted to grasp between them the part to be held and each of which is bent toward the other and thence tapered to substantially a point, each bent-off tapered portion being adapted to puncture and thereby catch the part to be held and being arranged to overlap and to wipe against the other bent-off tapered portion in the grasping position of the forceps.

In testimony whereof I affix my signature.

EARLE B. HOPPER.