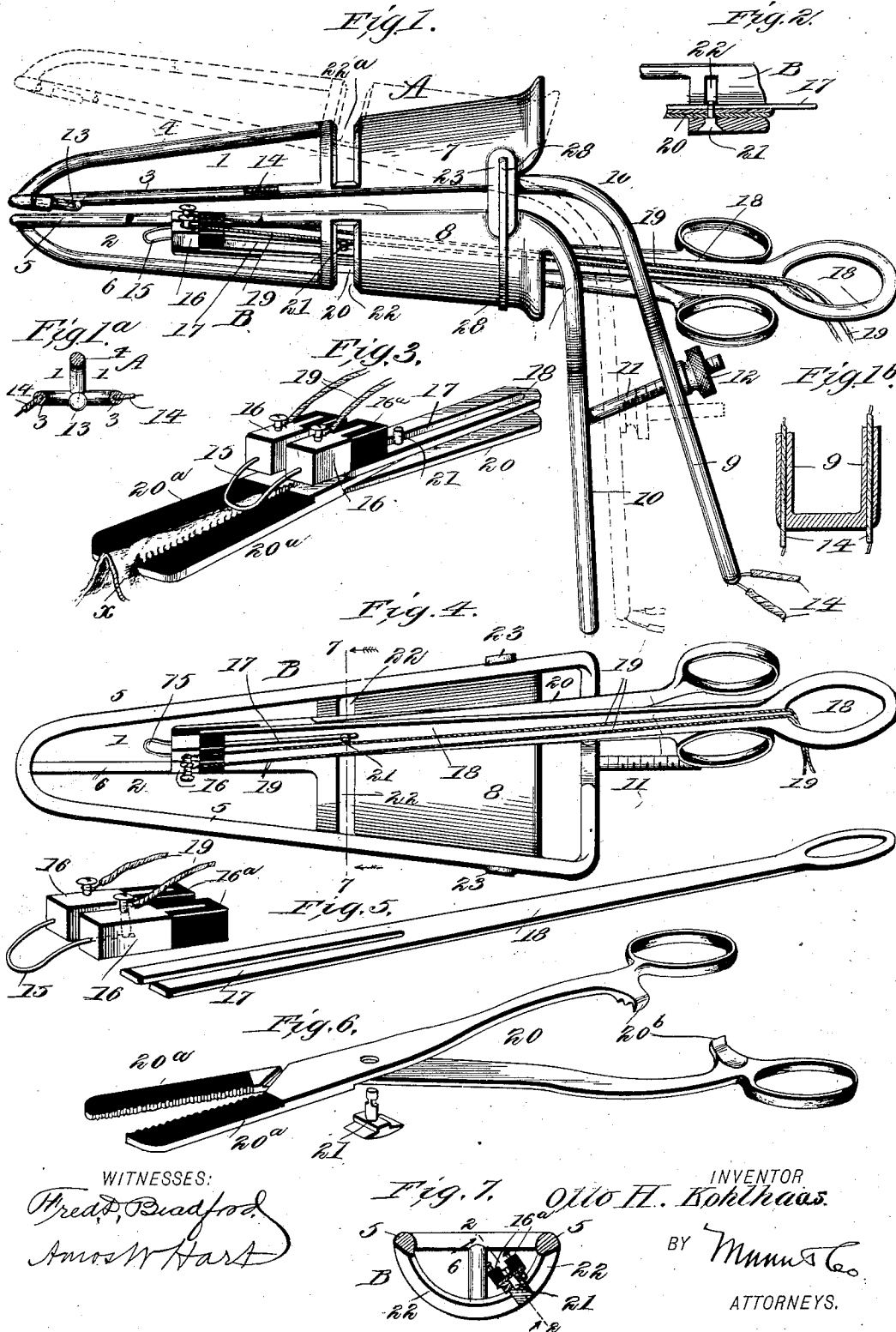


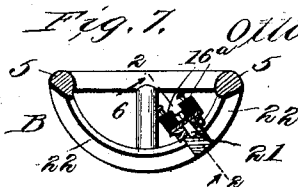
O. H. KOHLHAAS.
RECTAL OR VAGINAL SPECULUM.
APPLICATION FILED DEC. 29, 1902.

NO MODEL.



WITNESSES:

Frederick Bradford
Amos W. Hart



INVENTOR
O. H. Kohlhaas.

BY *Munn & Co.*
ATTORNEYS.

UNITED STATES PATENT OFFICE.

OTTO HENRY KOHLHAAS, OF CALUMET, MICHIGAN.

RECTAL OR VAGINAL SPECULUM.

SPECIFICATION forming part of Letters Patent No. 726,704, dated April 28, 1903.

Application filed December 29, 1902. Serial No. 136,900. (No model.)

To all whom it may concern:

Be it known that I, OTTO HENRY KOHLHAAS, of Calumet, in the county of Houghton and State of Michigan, have invented a new and improved Rectal or Vaginal Speculum, of which the following is a specification.

My improved speculum has a skeleton body or frame and is preferably made in two longitudinal parts or jaws which are detachably hinged together, so that they may be separated or adjusted for dilating the passage in which the instrument is inserted.

The invention includes various electrical and other attachments of such body or frame whereby the rectal or vaginal passage may be illuminated to facilitate examination or surgical operation, also devices for grasping and holding inflamed or diseased tissue and morbid growths requiring excision or other treatment, and devices for cauterizing such diseased parts by aid of the galvanic current.

The details of construction, arrangement, and operation are as hereinafter described, reference being had to the accompanying drawings, in which—

Figure 1 is a side view of my improved instrument. Figs. 1^a and 1^b are detail views hereinafter referred to. Fig. 2 is a detail section showing the arrangement of the pivot-fastening for the tissue-clamping device and the cautery-holder. Fig. 3 is a perspective view illustrating the practical application of the tissue-clamp and cautery. Fig. 4 is a plan view of the under jaw of the instrument and the parts ordinarily attached thereto. Fig. 5 is a perspective view of the cautery proper and the bar carrying the same. Fig. 6 is a perspective view of the tissue-clamping device. Fig. 7 is a cross-section on line 7 7 of Fig. 4.

The body of the speculum is formed of two longitudinal jaws or sections A B, which are tapered and provided with openings 1 2 in their inner portions. In other words, the inner ends of parts A B are constructed skeletonwise or of rods extending from the solid outer or base portions. The jaws A B are provided with bent or turned-down handle portions 9 10, having the usual adjusting device, comprising a screw 11 and milled nut 12. A small electric incandescent lamp-bulb 13 (see Figs. 1 and 1^a) is arranged at the in-

ner or front end of the upper jaw A and projects inward therefrom, so as to illuminate the adjacent portions of the rectal or vaginal passage. Insulated conductors 14 extend through the hollow side bars of handle 9 (see Fig. 1) and side bars 3 of jaw A. (See Fig. 1^b.) These conductors consist of thread-wound copper or other metal wires and connect with a suitable electric generator or other source of electricity.

It is manifest that when the speculum is introduced the surrounding membranous tissue will protrude more or less into the spaces 2 3 between the rods 3 4 and 5 6 composing the front skeleton portions of the jaws A B. For treating such tissue when diseased, say gangrenous or inflamed and exposed so as to produce hemorrhages, or for removing morbid growths, such as polypi or other tumors, I employ a galvanic cautery 15, which forms an attachment of insulated holders 16, secured to the bifurcated portion 17 of a bar 18, which is adapted to slide lengthwise in the speculum proper and also for lateral movement as conditions may require. The holders 16 are metal blocks having clamp-screws, and they are secured to the forks 17 of the bar 18 by means of insulating or rubber blocks 16^a. Suitable insulated electric conductors 19 pass through the blocks 16 and 16^a and connect with the cautery 15 and extend out through the base or outer end of the speculum, as shown in Figs. 1 and 4.

For the purpose of grasping and holding the diseased tissue while being acted upon by the cautery I employ the device 20, (see Figs. 3 and 6,) which resembles scissors in general structure, but is provided with jaws 20^a, having their inner edges serrated and their upper sides covered by hard rubber, as shown, for insulating them or, in other words, preventing short-circuiting of the galvanic current if the cautery 15 comes in contact with the jaws when being used.

As shown in Fig. 3, diseased tissue *x* is held between the jaws 20^a and the cautery 15 is in position for use—that is to say, for being pushed or drawn over the tissue.

The levers of the tissue-clamping device 20 and the cautery-carrying bar 18 have a common pivot 21. As shown in Fig. 6, the same consists of a cylindrical body having opposite

side notches or open slots and an enlarged head which is beveled on the under side. Such body of the rivet passes through the levers of device 20 at their intersection and also through the slot of the bar 18. It will be seen that the forked parts 17 of said bar slide in the slots of the pivot, so that the bar is held to the clamp 20, yet left free to slide lengthwise on the pivot or to be turned right or left thereon, as may be required to properly adjust and manipulate the cautery 15. The clamp 20 may also be turned right or left on the pivot 21, but not so freely as the bar 20.

The outer or handle portions of the clamp 20 are provided with claws 20^b, (see Fig. 6,) which are adapted to engage for locking the clamp closed when duly adjusted for holding tissue *x*, as in Fig. 3. The elasticity of the shanks of the handles permits the said claws to be sprung apart sufficiently to permit their engagement and disengagement.

The clamp and cautery require to be shifted bodily laterally or around the inner surface of the lower jaw B in order that the surgeon may operate on different portions of the diseased tissue. To permit this movement, I provide the outer solid portion 8 of said jaw B with a transverse slot 22, (see Figs. 1, 4, 7,) and the elongated head of pivot 21 is adapted to fit in such slot, so that the body of the pivot is prevented from turning on its axis, and thereby held duly engaged with the fork 17 of bar 18 by means of its slots, as before described. The inner bevel of the pivot-head also fits a like bevel formed on the outer side of the slot 22 in the jaw B. (See Fig. 2.) In order to adjust the parts 18 and 20 right or left, they are pushed laterally, or the finger may be applied to the pivot-head 21, so as to slide it along the slot 22, and thus around the inner periphery of the jaw B. As shown in Fig. 1, the upper jaw A is also provided with a like slot 22^a, so that the tools 18 20 may be applied to such jaw in case it is necessary.

As shown in Figs. 1 and 4, the lower jaw B has vertical lugs 23, and a spring fastening or wire 28 of semicircular form is applied to connect parts A B, the said wire having its ends bent inward to adapt them to pivot the jaw A between and to the lugs 23. This attachment permits the jaws A B to be conveniently separated and reengaged whenever their separate insertion in or removal from a rectal or vaginal passage may be advisable.

What I claim is—

1. A speculum having a tissue-holding clamp and a galvanic cautery-holder which are pivoted and also adapted to be adjusted laterally, substantially as shown and described.

2. A speculum having its body provided with lengthwise slots through which tissue is visible and accessible when the instrument is in use, and the clamp attached to the speculum within the same and composed of pivoted jaws which are parallel to a side of the speculum, whereby they are adapted for

grasping and holding tissue, substantially as shown and described.

3. A speculum having openings for tissue and a tissue-holding device and a cautery-holder which are movable within the instrument, substantially as shown and described.

4. A speculum having a skeleton body through whose slots tissue may be seen and examined, and an incandescent electric lamp arranged at the inner end of such body and projecting rearward within the body and forming a permanent attachment thereof, substantially as shown and described.

5. A speculum having an incandescent lamp fixed at its front end and projecting rearward or toward its outer end, and electrical conductors extending to the lamp through passages in the body of the instrument, substantially as shown and described.

6. A speculum having an incandescent electric lamp fixed in its inner end, and constructed with a side tube and a tubular handle, and insulated electrical conductors passing to said lamp through such tubular portions, as shown and described.

7. A speculum having a transverse guideway in its body, and a tool for use in treating diseased tissue which is secured and guided in such guideway, substantially as shown and described.

8. A speculum having a transverse guideway, a tool for use in treating diseased tissue, and a device to which such tool is attached the said device being movable in such guideway, substantially as shown and described.

9. A speculum having a transverse slot, a pivot passing through such slot, and having a head adapted to slide laterally therein, and a tool for use in treating diseased tissue, the same being secured to and movable on the pivot within the speculum, as shown and described.

10. A speculum having a skeleton-like construction and a guideway, a tool for use in treating diseased tissue and a device on which said tool is mounted, which device is movable in such guideway, substantially as shown and described.

11. A speculum having a skeleton-like construction, a tissue-clamp, and a device on which such clamp is mounted within the cavity of the instrument, substantially as shown and described.

12. A speculum having a lateral opening for access to tissue, a tissue-clamp and a cautery-carrier having a common pivot, on which they are adapted for adjustment as shown and described.

13. A speculum having a transverse slot, a tissue-clamp and a cautery-holder arranged on the latter and adapted for independent movement, whereby the cautery may be passed over tissue while held by the said clamp, as shown and described.

14. A speculum having a lateral opening for access to tissue, a transverse slot, a headed

pivot adapted to slide in the latter, a tissue-clamp and cautery-holder pivoted on said pivot and the latter also adapted to slide lengthwise, substantially as shown and described.

15. The combination with the body of a speculum having a pivot as described, of a cautery-holder having a lengthwise slot adapted to secure and engage the pivot, substantially as shown and described.

16. The combination, with the body of the speculum, having a transverse guideway, and a pivot projecting inward and adapted for lateral adjustment in said guideway, of the scissors-like tissue-clamp, and the slotted bar carrying a galvanic cautery, which are pivoted on the said pivot, the clamp having its jaws covered with insulating material and the cautery consisting of a wire arranged as shown and described.

17. The combination with the speculum-body and a pivot having open slots in opposite sides, of the cautery-holder having jaws which are adapted to enter and slide in the pivot-slots, as shown and described.

18. The combination with the body of the speculum having a laterally-movable pivot projecting into its interior, of a tissue-clamp whose jaws are adapted to swing on said pivot, a cautery-holder which is slidable on the pivot

and locked with the latter so as to hold the tissue-clamp thereon, substantially as shown and described.

19. The combination, with the speculum-body, of a galvanic cautery having jaws through which the current-conductors are passed and by which they are duly insulated, and means for attaching the cautery-holder to the speculum proper, as shown and described.

20. The speculum having a transverse guideway for a device for attachment of a tool for use in treating diseased tissue, as shown and described.

21. A speculum formed of two tapered jaws and a U-shaped spring-fastening for such jaws, the same having intumed ends that engage said jaws and form pivots therefor, substantially as shown and described.

22. The combination, with the speculum-body and a pivot therein, of a scissors-like tissue-clamp whose jaws are connected by said pivot, and whose shanks are provided with engaging claws for holding the clamp closed, as shown and described.

OTTO HENRY KOHLHAAS.

Witnesses:

EVA MEYER,
A. E. PETERMANN.