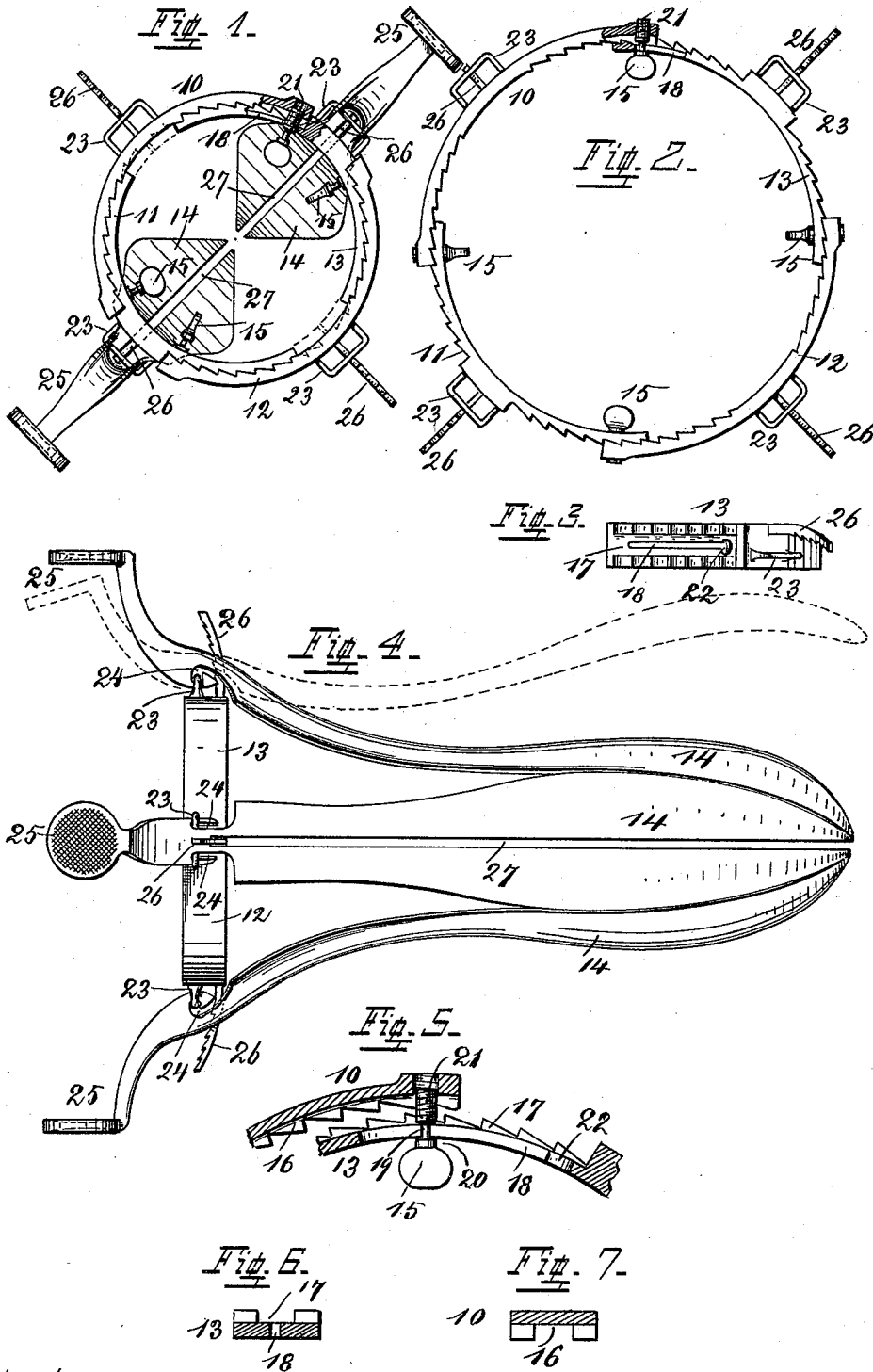


(No Model.)

W. E. CLOUGH.
SPECULUM.

No. 447,761.

Patented Mar. 10, 1891.



Attest
Jos. A. Williams
Cham. & Secy.

Inventor
William E. Clough
by Carl Spongel Atty.

UNITED STATES PATENT OFFICE.

WILLIAM E. CLOUGH, OF OXFORD, OHIO.

SPECULUM.

SPECIFICATION forming part of Letters Patent No. 447,761, dated March 10, 1891.

Application filed June 23, 1890. Serial No. 356,319. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM E. CLOUGH, a citizen of the United States, residing at Oxford, in the county of Butler and State of Ohio, have invented certain new and useful Improvements in Speculums; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to speculums, and the object is to arrange the adjustability of these instruments so that either the anterior or the posterior part of the passages within which they are introduced may be dilated independent of the other, or, again, the whole passage may be evenly dilated through its entire length.

Another object is to have parts of the instrument removable after dilation, so as to permit inspection and local treatment of the surface of these interior membranes, which are retained in their dilated position by the balance of the instrument. This triple adjustment is attained by having the valves pivotally mounted upon the sections of an expansible ring, with which the valves are moved either toward each other or apart from each other, and on which ring these valves may be swung independently from the adjustment of the ring toward each other or distended whatever the special case may require. After adjustment these valves may be locked in position or unlocked and removed individually, in order to permit direct access to the parts. In cases where dilation of the superficial entrance is only required it is done by the ring alone, which, however, is kept in position by the now closed and inserted valves.

The special construction of this instrument is more fully explained in the following description, and illustrated in the accompanying drawings, in which—

Figure 1 shows an end view of the device, the ring completely contracted and two of the valves removed. Parts of the ring are in section. Fig. 2 shows the ring fully expanded

and parts of it in section, also all the valves removed. Fig. 3 shows a top view of section 13 as it appears in Fig. 2 when looking down upon it. Fig. 4 shows a side view of the device complete, one valve partly distended and shown in dotted lines. Fig. 5 is an enlarged sectional view of the lapping ends of two joining sections. Figs. 6 and 7 are transverse or profile sections of one of the inner and one of the outer sections, respectively.

10 12 and 11 13 are the four sections of an expansible ring, which has to each one of its sections a valve 14, removably secured. There may be more or less sections, but four are preferred. Beginning from their respective ends most of the inner surface of sections 10 and 12 and most of the outer surface of sections 11 and 13 are provided with ratchet-teeth, which engage with each other, as most plainly to be seen in Figs. 1 and 2. The whole inner surface of the outer sections 10 and 12 might be provided with teeth and the inner sections might be longer, so as to meet when collapsed, (see dotted lines in Fig. 1,) whereby the expansibility of the ring would be increased. This, however, is a mere matter of degree of adjustment and not very material. The sections of the ring are of spring-steel and so tempered and bent that the inner sections 11 and 13 have a tendency to straighten when free and disengaged, while under same conditions the outer sections 10 and 12 have a tendency to curl or bend inwardly. By these opposing tendencies of the elastic sections a proper contact of their respective teeth is secured and maintained. To prevent complete disengagement of the sections when their teeth are out of contact during contraction of the ring, and to be enabled to lock them together after adjustment, screws 15, passing through the lapping parts of the sections, are provided and manipulated in a manner which will be presently explained.

The teeth on the sections do not extend clear across over their entire width, but are left out midway, producing a blank space, as shown at 16 of the outer section and at 17 of the inner section. (See Figs. 5, 6, and 7.) On the outer section this blank space has no further object beyond reducing the stiffness

of the metal to its proper degree of elasticity. On the inner section this blank space is perforated by two slots 18, beginning near the ends of these sections and running lengthwise through toward their centers. Through these slots the thin shank 19 of screw 15 passes, being of a length corresponding with the depth of the slot, or, which is the same, being as long as the metal is thick at this point. Outside of this slot and to either side of it the screw is thickened, as shown at 20 and 21, by which arrangement its movements are limited to one lengthwise only within the slot, its own rotary movement excepted.

Assuming the ring to be fully expanded and locked, as shown in Fig. 2, and it becomes desirable to contract it, screws 15 are turned to the left as if they were to be unscrewed, which, however, is impossible, owing to the inability of the thicker portion 21 passing through the narrower slot. The screws therefore retain their position on the inner sections; but the effect of their being rotated causes the outer sections to unscrew from them and be raised off the inner sections and their teeth to become disengaged from each other. The screw-threaded portion 21 of screw 15 is of course long enough to retain its hold within the screw-hole in the outer section after the teeth have become disengaged. (See Fig. 5.) After all the teeth at all the joints have thus been disengaged the ring may be easily partly or totally collapsed. If to be completely collapsed, the screws will pass through the entire length of the slots and to their ends, where they widen out, as shown at 22. This opening 22 is wide enough to permit the thicker part 21 of the screws to pass through, and as soon as this part of the screw is opposite this enlarged portion the former will snap into it on account of the opposing elasticity of these sections asserting itself. The teeth will come into contact again and the ring will stay in such position, kept there by part 21 of screw 15, which occupies hole 22. (See Fig. 1.) To expand the ring again, screws 15 are first pushed outwardly to raise from within hole 22. Next their narrowed part 19 is passed within slot 18, causing the thicker part of the screw to slide on the smooth portion 17 between the teeth of the inner section, and causing further complete disengagement of the teeth of both sections. The ring may now be partly or wholly expanded, and after the proper position has been found the screws are turned to the right, drawing the outer section down onto the inner one, bringing their teeth into contact and causing the ring to become locked.

Outside and midway on each section there is a staple-like extension 23, to which the valves 14 are hinged, the outer bar of these staples passing through slots 24 on each side of the valves. These latter terminate in handles 25, whereby their remote other ends may be manipulated. Central with staples 23 and

a little distance back thereof are notched springs 26, which pass through slots 27 in the valves, and, pressing against their lower ends, keep the abrupt bend in the inner ends of slots 24 of the valves always against the respective staples passing through them. If distention of the inner ends of the valves is desired, their handles 25 are pressed inwardly toward the center of the ring, causing all parts on the other side of the pivotal point of the valves, which is the staple, to rise, raising also the lower end of slot 27. Spring 26 is always bearing against this end, its teeth engaging with it and supporting it as soon as the handle of the valve is let go. To close the latter again, all that is necessary is to press spring 26 a little back and out of contact with the valve, when the same may be freely moved.

If removal of any one of the valves is desired, no matter in what position it may be in, such is done by means of its handle pressed toward the ring, causing the short bends at the ends of slots 24 to pass out from their respective staple, which ordinarily holds them, permitting the valve to be pulled out easily, slots 24 and 27 passing and clearing staples 23 and springs 26.

For cleaning purposes the screws may be totally removed, permitting the whole instrument to be taken completely apart and giving access to every one of its parts.

As will be seen, either the inner end of the passage may be dilated by distending the free ends of the valves or the entrance may be dilated by expanding the ring, in which case the latter, being outside of the passage, is held and kept in position by the inserted instrument. These two adjustments are independent from each other, but may be used simultaneously when all parts of the vagina are to be dilated. The possibility of removing any one of the valves is a great advantage, as it permits direct access to the surfaces to be treated, and also provides plenty of room in case of operations without permitting the dilated parts to collapse.

The instrument is to be constructed in different sizes to make it applicable to different cases and conditions, and also enable it to be used in connection with the rectum.

I claim as new—

1. In a speculum, the combination, with its valves, of an expansible ring upon which the former are pivotally mounted, by which construction either the fulcrumed portions of the valves or their inner ends may be adjusted—that is, distended or contracted—independently from each other and held independently in such adjusted position, all as described and shown.

2. In a speculum, the combination of its valves, an expansible ring upon which the former are pivotally mounted, and means to lock the sections of this ring at any point between the extreme limits of its adjustability, all as shown and described.

3. In a speculum, the combination of the valves having an outwardly-extending shank with a ring to which the former are pivotally secured, and serrated supports 26, occupying 5 slots in the valves and holding them in their adjusted positions when distended, all as substantially shown and described.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM E. CLOUGH.

Witnesses:

GEO. W. MEYER,
R. A. HUTCHINSON.