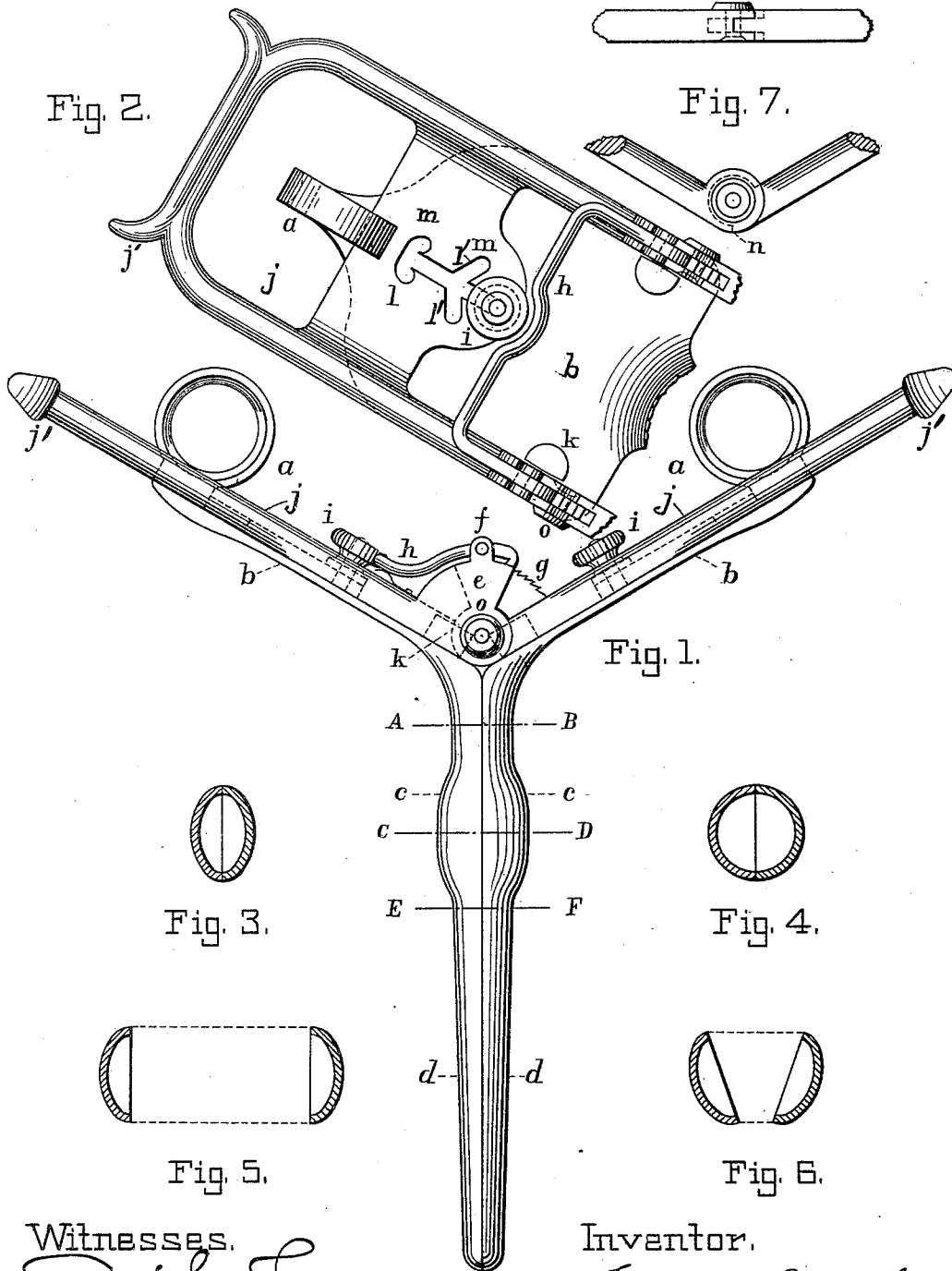


(No Model.)

T. A. EDWARDS.
SPECULUM.

No. 462,827.

Patented Nov. 10, 1891.



Witnesses.
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UNITED STATES PATENT OFFICE.

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SPECULUM.

SPECIFICATION forming part of Letters Patent No. 462,827, dated November 10, 1891.

Application filed April 18, 1891. Serial No. 389,474. (No model.)

To all whom it may concern:

Be it known that I, THOMAS A. EDWARDS, a citizen of the United States and a resident of Denver, in the county of Arapahoe and the State of Colorado, have invented a new and useful Speculum, of which the following is a description, reference being taken to the accompanying drawings, forming part of this specification.

My invention is an improved speculum for rectal, vaginal, urethral, nasal, aural, and like inspections and operations; and it consists in the instrument and its parts and details constructed, arranged, combined, and used substantially in the manner hereinafter described, illustrated, and claimed.

In the drawings, Figure 1 is an elevation of my complete speculum as designed for a rectal speculum, though with but slight changes in the valves or blades it forms a vaginal-speculum. Fig. 2 is a detail view of the retracting, expanding, and rotating mechanisms. Figs. 3 and 4 are cross-sections of the blades or valves of this speculum when closed, the sections being respectively taken on planes A B or E F and on plane C D in Fig. 1. Figs. 5 and 6 are similarly-taken cross-sections on the plane E F, but showing the blades opened as in use; and Fig. 7 is a detail view of a modified form of joint for my speculum.

In the different views like letters of reference indicate like parts.

In my improved speculum I effect expansion by a parallel retraction or separation of the blades and by an angular motion of the blades. These two movements are distinct and independent and may be used separately or in combination, as needed, in any instance. In addition, to increase the area of exposed membrane at one side of my speculum without any greater distension of the rectum I may rotate either or both blades in a manner to increase the separation of two opposing edges, giving me an exposure, as indicated by the section, Fig. 6. To enable me to produce these three independent adjustments I construct and arrange my speculum as follows and as illustrated: To especially adapt my speculum for rectal use I form the blades of size and shape conforming as nearly as

may be to the rectum. I provide the blades with the enlarged or bulbous portion, (shown in the drawings on the line or plane C D in Figs. 1 and 6,) which enlargement is intended to pass within or above the grasp of the sphincter muscles, and thus assist in retaining the speculum in position and in preventing its expulsion by the contraction of those muscles. By my construction I am able to make my valves or blades long enough to extend to and into the sigmoid flexure, and thus greatly facilitate examination.

The bases or roots of my blades or valves are expanded and prolonged into shield plates or panels *b*, which are preferably formed integral and at an angle with the blades, and which are arranged to slide in or upon the posterior surface of the guiding and supporting frame *j*. This frame *j* is formed in two parts, jointed together at its center *o*, and each provided with suitable bearing-surfaces for the sliding panels or shield-plates *b*. On the shield-plates at *k* I place guide-lugs, which, while guiding the plates along the frame and preventing lateral motion at that point, admit of some twisting or rotary action that serves an important function in my instrument, and which will be hereinafter more fully set forth.

To secure or lock the sliding panels or shield-plates in any position desired I may use any well-known means, though for convenience and certain other reasons I very much prefer to accomplish this by the studs and thumb-nuts *i* on the shield-plates working in and extending through the ways or slots *l* in the central plates *m* of the frame *j*. These slots or ways *l* are constructed with the main straight paths, permitting the rectilinear withdrawal of the plates *b* and with them the blades of my speculum, and, in addition, the branching ways *l'*, which permit of the twisting or rotary action just referred to. By the screwing up of the thumb-nuts *i* the plates *b* may be securely locked in position on the frame *j*.

When the blades or valves *d* of my speculum are closed together, the two parts of the frame will extend at an angle to each other. This angle is purely arbitrary and depends on the angles between the blades of the in-

strument and their shield-plates *b*, the which in turn should be such as to conform conveniently to the fatty buttocks surrounding the anus. The angle between the two parts of the frame *j* may be preserved by any suitable means; but I prefer to use ratchets *g*, secured to one part of the frame, and pawls *f*, pivotally secured to the other part and engaging with the ratchets in a manner allowing the divergence but not the approach of the blades *d*. These pawls may be controlled by the double-armed lever *h*, extending across the frame from pawl to pawl.

In an instrument requiring no angular adjustment the two parts may be made integral or with the stop-joint shown in Fig. 7 at *n*, permitting a folding of the frame.

To facilitate the parallel separation of the blades by the sliding movements described above, I provide the grip-rings *a* on the sliding panels *b*, and preferably formed integral therewith, and rests *j'* on the frame, and for the more ready insertion of the instrument into the rectum I so form the ends or tips of the blades *d* that when closed together they form a smooth hemispherical surface and when opened present no angular corners or projections that may injure or irritate the mucous membrane.

In use, after inserting the blades till the bulbous enlargement *c* is within the sphincter muscles, the operator firmly draws apart the panels or shields *b* by retracting the rings *a*, and when thereby the blades have been sufficiently separated the panels may be secured in position by the screw-nuts *i*. There will now be exposed to inspection between the parallel edges of the blades the mucous lining of the rectum up to and within the sigmoid flexure. If it be now desired to expose a greater area on one side or the other, the thumb-screws may be successively loosened and shifted into one or the other of the branch ways or slots *l* and there, if need be, secured. By this operation it will be seen that the blades are severally rotated or turned on longitudinal axes, and, as is indicated in the section, Fig. 6, the area of exposed surface on one side or the other increased. If, on the other hand, I desire to expose more surface at the inner ends or tips of the instrument, the two parts of the frame *j* may be angularly approached and the blades thereby made to diverge. In such case the pawls and ratchets retain the blades in their diverging position till released by operating the lever *h*. If, in a third instance, I desire particularly to examine or dilate the rectum in the vicinity of the anus, I may, after inserting the closed blades, disengage the pawls and ratchets, and then, by retracting the shield plates or panels *b* and allowing the tips of the blades to remain in contact, draw open only that part of the rectum adjacent to the sphincter muscles.

From the independent adjustments just detailed it will be seen that I can use my speculum as a dilator for both sphincters and

rectum, or for either alone, without in any way materially disturbing the other; also, from the rotary adjustment above set forth I am enabled with my speculum to get a much greater exposed area at any one point with less distortion than is possible by any other speculum in use or known.

The panels or shields *b*, when my speculum is in use, press against and firmly hold back the fatty buttocks of the patient, and at the same time serve to check any rotary tendency or other displacement of the instrument as a whole. To insure this result I prefer to mill or otherwise roughen in the well-known manner the posterior surfaces of the panels or shields.

For use as a vaginal, urethral, aural, or nasal speculum it will be understood that changes in size and in the form of the parts are alone necessary, and as these forms will be readily understood by the profession I will not here detail them. So many other modifications may from time to time suggest themselves as circumstances may demand, and all such while additional to are yet within my invention.

From the foregoing description it will readily be seen by those skilled in general surgery that my speculum possesses the advantages of being easily and quickly introduced, of being self-retaining and readily adjusted without the need of an assistant, of being simple of construction and operation, and rapidly taken apart, cleaned, and reassociated, for which last reason it is peculiarly aseptic. Besides these advantages, it may, without change, be used as a dilator, and the blades when taken apart are admirably adapted for use as retractors for the vagina or rectum.

On account of its convenience and reliability my instrument will be of great value to the medical profession, while, on account of the simplicity of its parts, it may be made at comparatively small cost.

Having now set forth one form of my invention and the manner of using it, I claim as new, and desire to secure by Letters Patent of the United States, the following:

1. In combination in a speculum, a frame consisting of two parts jointed together at its center *o* and provided with one or more pawls and ratchets for retaining the said parts in position, sliding panels or shield-plates *b*, carried and sliding in or on the said frame and provided with guide-lugs *k*, blades or valves provided with a bulbous portion or enlargement *c* and formed integral and at an angle with the said panels or shield-plates, and one or more studs and thumb-nuts *i* on the said panels or shield-plates working in and adapted to be secured in slots or ways *l*, and branch slots or ways *l'* in the said frame, substantially as and for the purposes set forth.

2. In combination in a speculum, a frame consisting of two parts jointed together and provided with means for retaining the said parts at various angles to each other, sliding

panels or shield-plates sliding in or on the said frame and provided with suitable guides, blades or valves *d*, formed integral with the said panels or shield-plates, and thumb-nuts
5 and studs or equivalent means for locking the said panels in position on the said frame, substantially as and for the purposes set forth.

3. In combination in a speculum, a jointed frame consisting of two relatively adjustable
10 parts, a panel or shield-plate adjustable on each of said parts and provided with a speculum blade or valve, and means for securing the said panels in position on the said frame, substantially as and for the purposes set forth.

15 4. In combination in a speculum, a frame *j*, panels or shield-plates adjustable thereon and provided with speculum-blades *d*, and one or more ways or slots *l* and branch slots *l'* in said frame, and co-operating studs and
20 thumb-nuts *i* on the said panels for securing

the said parts in position, substantially as and for the purposes set forth.

5. In combination with the other parts of a speculum, a frame provided with one or more suitable guide or slide surfaces, a speculum
25 blade or valve provided with a shield-plate or panel sliding in or on the said frame and suitably guided at one or more points in such manner as to permit a slight rotary or twisting movement, and means for locking the said
30 panel or shield-plate to the said frame, substantially as and for the purposes set forth.

In testimony of the foregoing claims and specification I have hereunto set my hand this 14th day of April, 1891.

THOMAS A. EDWARDS.

Witnesses:

EDWARD G. THOMAS,
FRANK E. SHEPARD.