J. C. HALL.
Speculum.

No. 202,813. Patented April 23, 1878.

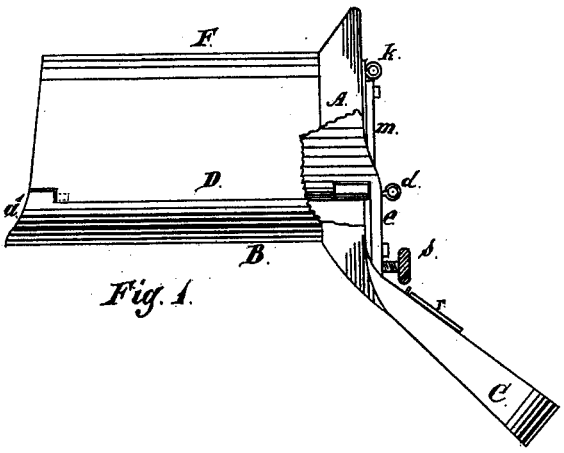

Fig. 1.

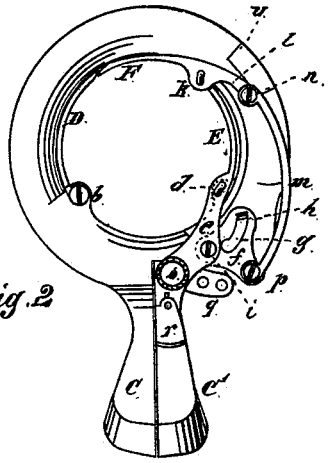

Fig. 2.

Fig. 3.

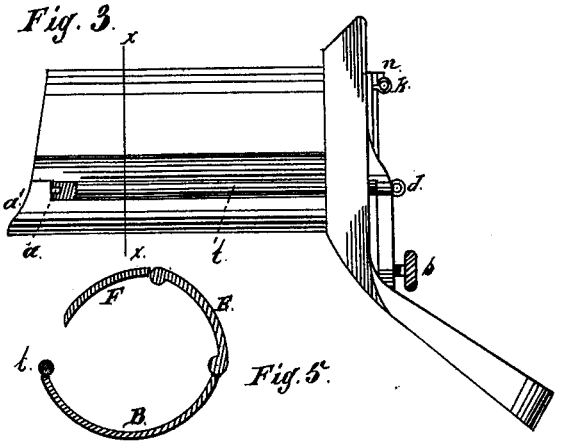

Fig. 5.

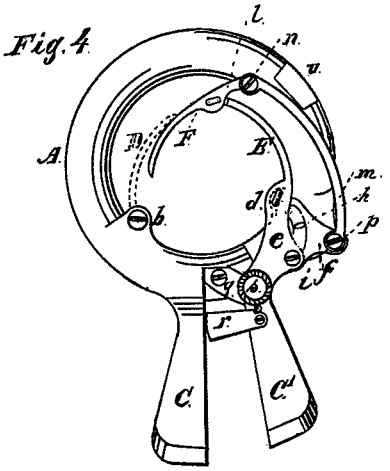

Fig. 4.

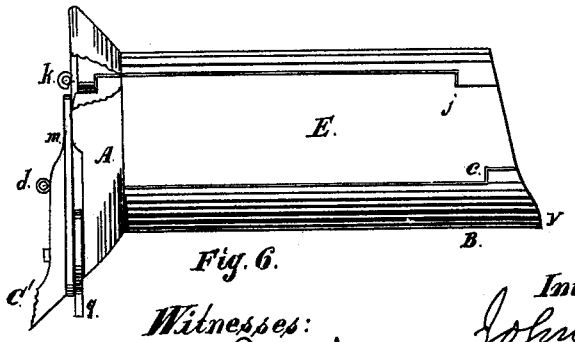

Fig. 6.

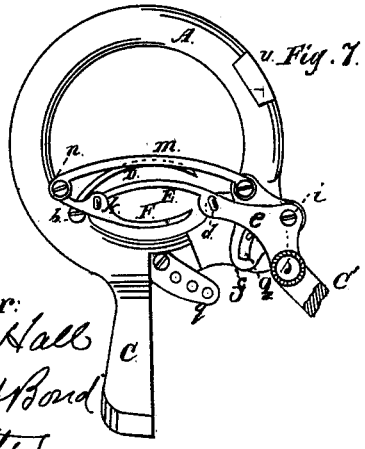

Fig. 7.

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JOHN C. HALL, OF MONORE, WISCONSIN.

IMPROVEMENT IN SPECULUMS.

Specification forming part of Letters Patent No. **202,813**, dated April 23, 1878; application filed July 14, 1877.

To all whom it may concern:

Be it known that I, JOHN C. HALL, of Monroe, Green county, State of Wisconsin, have invented new and useful Improvements in Speculums, of which the following is a full description, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation; Fig. 2, a front elevation; Fig. 3, a side elevation with one valve removed and a rod inserted in its place; Fig. 4, a front elevation, showing one position in which the valves may be placed; Fig. 5, a cross-section at *x x* of Fig. 3, looking to the left; Fig. 6, a side elevation, showing the side opposite to that shown in Fig. 1; Fig. 7, a front view, showing the position of the parts when the valves are folded down ready for insertion.

The object of my invention is to furnish an improved surgical instrument, to be used in examining the uterus, vagina, rectum, and other canals or cavities of the body, so constructed that its form and size can be changed to facilitate introduction, and so that when introduced it can be readily expanded into a cylinder of suitable size; to so construct the instrument that it can be used as a cylinder, and so that by removing one valve there will be an open place along one side for the examination of the walls of the passage; and to so construct the instrument that it can be easily adapted to passages of different sizes.

The valves of my instrument are hinged longitudinally, and open uniformly their entire length; and this result I accomplish by providing one stationary leaf or valve, to which movable valves are hinged longitudinally, and in the most complete instruments I hinge a third valve to one of the other movable valves, the valves being operated as hereinafter fully described.

In the drawings, A represents a beveled metal ring; B, a fixed valve or leaf; C, a handle attached to the ring. The parts A B C may be cast together. D is a movable valve, hinged longitudinally to B by means of a fixed pin, *a*, in the shoulder *a'* upon B at one end, the pin entering a hole in D, as shown in Fig. 3, and by means of a screw or loose pin, *b*, at the other end. This screw or pin *b* passes through a little projection on the ring A into a hole in the end of the valve D. E is another valve, hinged upon the opposite side of B by means of a fixed pin and socket, at one end, as before described, and by means of a pin, *d*, at the other end. *e* is an arm upon E, the arm being in front of the ring A, and C′ is another handle, extending out from the arm *e*. The valve E, arm *e*, and handle C′ may be cast together. *f* is a small plate, having a cam-groove, *g*, in it. *h* is a pin set into A, over which pin the groove *e* moves. The plate *f* is pivoted at *i* upon the back side of the arm *e*. The ring A is flattened upon the face, where the plate *e* is located. F is another leaf or valve, hinged to the valve E by means of a fixed pin and socket, at one end at *j*, and by means of a removable pin, *k*, at the other end. This pin passes through a shoulder on F into a socket in E.

The construction of the hinge of which the pin *d* forms a part can be seen in Fig. 1, a portion of the wall being cut away. *l* is a short arm extending out from the front end of the valve F. *m* is a curved arm or connecting-bar. Its upper end is pivoted to the rear or outer end of the arm *l*, and the other end is pivoted to a projection on the outer edge of the slotted plate *f*. *q* is a short bar secured to A, and provided with a series of holes, and *s* is a set-screw, by means of which the handle C′ and parts connected therewith can be held in any desired position. *r* is a stop, pivoted upon C′, so that it can be turned down or placed in the position shown in Fig. 4. I have provided *r* with a shoulder, to come in contact with a pin in C′ to limit the movement of *r* in one direction.

The edges of the two leaves D F which come together are beveled, as shown in Fig. 1. *t*, Fig. 3, represents a rod, which is to be used, as shown in said Fig. 3, when the valve D is removed, for the purpose of presenting a smooth surface along the exposed edge of the fixed leaf or valve B, the rod being held in place by means of the pin *a* and screw *b*.

The outer ends of the valves D E F are all within the ring A, which limits their outward movement. *u* is a projection on the face of A, under which the arm *l* passes, aiding to throw the valve F to its highest point.

The operation of this instrument is as follows:

Suppose the parts to be in the position shown in Fig. 2, by moving the handle C′ outward the valve E will be soon brought into the position shown in Fig. 4, because the handle C′ and arm *e* and valve E are formed together. At the same time the action of the slotted plate *f*, arm *m*, and arm *l* will bring F into the position shown in Fig. 4, and, the movement being continued, the parts will soon and easily assume the position shown in Fig. 7, the valves E and F having been brought to this position by the movement of the handle C′ and arm *e* and arms *m l* and plate *f*, and gravity having caused D to fall over. In this position the instrument can be easily inserted, after which, by reversing the movement of the handle C′, the parts will be brought to the position shown in Fig. 2, in which position the neck of the uterus can be examined.

Instead of opening the instrument, as shown in Fig. 2, it can be only partially opened, as shown in Fig. 4, making a smaller instrument. In this case, if the valve D be in place, it will occupy the position shown by dotted lines in Fig. 4. But this valve D can be removed, and then there will be an open space between the edge of the valve F and the fixed valve B, permitting an inspection of the walls of the passage, and by turning the instrument different portions of the walls can be examined. When used as shown in Fig. 4, the stop *r* can be turned into the position shown, and its end will come in contact with the inside of the handle C, preventing the further movement of the instrument.

When the valves are opened from the position shown in Fig. 7, D will be raised first by the valves E F, and then by F, acting on the inside of D.

Instead of using the instrument as shown in Fig. 4, to make it smaller the leaf or valve F may be removed.

The joints are such that the instrument can be easily taken apart to be cleaned. To facilitate the taking apart, I use pins *d k* instead of screws, and recommend that a pin be used at *b*.

A good instrument for some purposes could be made by the combination of the fixed leaf B and a single hinged valve, E, arranged to be opened and closed, substantially as set forth.

The inner end of B has a projecting lip, *v*, designed to pass under the uterus.

I have not given dimensions, as any instrument-maker familiar with speculums will know how large to make my instrument. The complete ring A is not a necessity, but is desirable in most cases. It might be made in sections, attached to the valves; but it is manifestly better as shown.

What I claim as new, and desire to secure by Letters Patent, is as follows:

1. The fixed leaf B and handle C, in combination with the hinged valves D E, arm *e*, and handle C′, substantially as and for the purposes set forth.

2. The fixed leaf B and handle C, in combination with the hinged leaves or valves E F, arms *e* and *l*, slotted plate *f*, bar *m*, and handle C′, substantially as and for the purposes set forth.

3. The ring A, fixed leaf B, and handle C, in combination with hinged valves D E and operating devices, substantially as and for the purposes set forth.

4. In a speculum, the fixed leaf B and one or more hinged valves, E F, in combination with the removable rod *t*, substantially as and for the purposes set forth.

JOHN C. HALL.

Witnesses:
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