

UNITED STATES PATENT OFFICE.

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SPECULUM.

No. 899,175.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM MEYER, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Specula: and I do hereby 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.

This invention relates to improvements in speculums, particularly of the type provided with illuminating apparatus.

The object in view is the construction of a speculum designed for obviating interference of the swab with the light, and at the same time providing a smooth, even, substantially cylindrical surface for those portions of the speculum contacting with the walls of the passage being inspected.

With this and further objects in view, the invention comprises certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described and claimed.

In the accompanying drawing:—Figure 1 is a view in side elevation of a speculum embodying the features of the present invention, the scale being increased over the actual size of the instrument. Fig. 2 is a longitudinal, central section through the same, the electrical conductor coupling being broken away. Fig. 3 is a transverse section taken on the plane indicated by line 3, 3 of Fig. 2, and looking in the direction indicated by the arrow. Fig. 4 is a transverse section taken on the plane indicated by line 4, 5 of Fig. 2, and looking in the direction indicated by the arrow, the parts being shown on an enlarged scale. Fig. 5 is a similar view to Fig. 4 on the same scale, and taken on the same plane and looking in the same direction, the plug and light connections being removed. Fig. 6 is a transverse section taken on the planes indicated by line 6, 6 of Fig. 2, the parts being shown on the same scale as in Figs. 4 and 5. Fig. 7 is a transverse section taken on the plane indicated by line 7, 7 of Fig. 2, and looking in the direction indicated by the arrow, the parts being shown on the same scale as in Fig. 6. Fig. 8 is an end view of the parts seen in Fig. 2, the parts being shown on the same scale as Fig. 7.

In this art, and particularly with reference

to speculums adapted for urethral inspection, it has been common to utilize an open ended tube and to position an electric light near the inner end of the tube retained in position by suitable connections extending outwardly through the tube, but difficulty has been experienced in preventing the light and its connections from becoming entangled with the cleansing swabs and other articles introduced through the tube. To avoid this difficulty, it has been proposed to fix upon the tube a second tube of relatively smaller diameter than the main tube of the speculum and to form an aperture in the wall of the main tube at or near its inner end, so that the light and its connections may be inserted in the smaller tube and the rays of light may enter through the aperture into the larger tube, but the difficulty with this proposed structure is that in inspecting the passage it is necessary to revolve the speculum and the smaller tube projecting laterally as it does from the larger tube abnormally distends the parts and renders revolution of the speculum intensely painful to the patient. Difficulty also has been found in cleansing the smaller tube, as the reduced diameter of the tube does not offer facility for access. It is proposed by the present invention to largely obviate the difficulties suggested and at the same time to gain all the advantages of formerly proposed structures.

Referring to the drawing by numerals, 1 indicates a tubular body which may be of any desired diameter and length according to the particular passage to be inspected. To the outer end of the body 1 is fixed an operating disk 2, and the inner end of the body is preferably restricted, as at 3. The body portion 1 is grooved longitudinally, as at 4, and the slot 4 opens into an internally arranged longitudinal housing 5 which may consist of a separate casing fixed to the walls of the body 1, or may be formed integral with the body as preferred, it being observed that the casing 5 lies entirely within the body 1, and therefore leaves the body perfectly cylindrical, while at the same time ready access is afforded to the interior of the casing 5 by the longitudinal slot 4. In fact the casing 5 with its outlet 4 may be considered a longitudinal guide-way or under-cut groove formed in the wall of the body portion 1. The inner end of the casing 5 terminates short of the inner end

of the body portion 1, and the material of the body portion is preferably bent, as at 6, across the longitudinal planes of the casing 5 and spaced therefrom, a space 7 thus being left between the inner end of the casing 5 and the inner end of the body portion 1. A relatively small housing 8 is provided which is formed integral with the wall of body 1 and positioned for closing the longitudinal slot 4. The casing 5 terminates with the termination of the slot 4, and the housing 8 extends from the inner end of the slot 4 to the bent portion 6, said housing 8, in operation, being designed to cover the lamp 9. Obviously, the housing 8 is made as small as practicable and as nearly continuous of the transversely circular lines of the cylindrical wall of the body portion 1 as possible. In this connection it is obvious that as the figures of the drawing are many diameters greater than the actual device, the housing 8 has the appearance of projecting much farther beyond the lines of the cylindrical wall of the body than it actually does in the instrument.

The lamp 9 is carried by a suitable cylindrical casing 10 which fits snugly within the guide-way 5 and is introduced into and removed from the guide-way by longitudinal movement. The body portion 1 extends through the disk 2 and the casing 10, lying within guide-way or casing 5, also extends through the disk and may be provided with any suitable electrical connections, as a plug 11 which may be connected in any suitable manner to a source of electrical supply, current being supplied through conductor 12 arranged in the plug and extending down through the casing and insulated from the plug and casing by suitable insulation 13, the return being simply grounded on the casing. The plug 11 is retained in position by a depending lug 14 which extends through a radial slot 15 formed in the disk 2.

To enable introduction of the body portion 1 and its accompanying parts without injury to the surrounding membranes, a plug 16 is extended through the inner end of the body portion 1, and is suitably rounded off to enable spreading of the membranes without occasioning excessive pain. The plug 16 is carried by a shaft 17 suitably fixed to a handle 18 arranged at the outer end of the body portion 1. The plug 16 is provided at one side with a concaved groove for accommodating the bent portion 6.

In operation, the plug 16 and lamp 9 being in the position indicated in Fig. 2, the body portion 1 is passed longitudinally into the passage to be inspected, and after having been inserted to the required extent, the plug 16 is withdrawn and the current turned on for lamp 9. The light from the lamp shines through the aperture 7 and through the open end of the body portion 1 upon the wall of the passage on the opposite side of the body

portion 1 to the lamp. The inspection of the passage is carried out by revolving the body portion 1 and withdrawing it a little at a time. Thus in urethral inspection, minute derangements may readily be discovered and suitable remedies applied locally which would be injurious if injected in the passage.

While the present improved structure has been specifically disclosed as a urethral speculum, it by no means follows that the invention is limited thereto, but the invention obviously comprehends speculums generally, and especially those employed in passages in which excessive dilation is objectionable.

It is apparent that the casing 5 serves as a guide way for firmly retaining the lamp and its connections against lateral play, so that the lamp is not free to be knocked about or moved in the body portion 1, and, therefore, swabs may be introduced and removed without liability of entanglement with the lamp and its connections.

It is to be observed furthermore that the casing 10 closes slot 4 and thus presents to the surrounding membranes a continuous, even surface free from projections or corners liable to lacerate or injure the membranes. The casing also serves to sustain the lamp rigidly in place, and thus obviates any danger of the lamp dropping down into the path of a swab or other appliance introduced through the speculum.

The termination of the guide way or casing at the beginning of the housing 8 leaves the lamp 9 entirely exposed within the body 1, so that the illumination of the tissues surrounding the inner end of the speculum will be much better than if the light had been situated in an auxiliary chamber, and the light rays projected forwardly through a small aperture at a considerable angle into the speculum. The bent portion 6, extending as it does across the longitudinal planes of the light and toward the longitudinal axis of the body 1, will tend to reflect the light against the immediately opposite tissue.

What I claim is:—

1. In a speculum, a cylindrical, hollow body portion, a casing arranged longitudinally of and entirely within the body portion and a lamp and its connections snugly fitting in said casing and filling the same.

2. In a speculum, a hollow, cylindrical body portion, a casing arranged in the body portion and extending longitudinally thereof and terminating contiguous to the inner end of the body portion, the wall of the body portion being slotted longitudinally along the said casing, and light connections arranged in said casing and closing the slot.

3. In a speculum, a substantially cylindrical, hollow body portion, a casing extending therein and terminating contiguous to the inner end of the body portion, a lamp disposed at the inner end of the said casing,

and a tubular connection for said light lying within said casing with the outermost points of its surface substantially in the transversely circular lines of the outer surface of the body portion.

4. In a speculum, a substantially cylindrical, hollow body portion, and a casing extending longitudinally of and within the body portion and terminating contiguous to the inner end thereof, the said casing being adapted to receive connections for a light, and a light being adapted to be disposed substantially at the inner end of the casing, the material of the body portion being bent at its inner end across the longitudinal planes of the casing toward the longitudinal axis of the body portion.

5. In a speculum, a hollow, substantially cylindrical body portion, a casing extending longitudinally thereof, the walls of the body portion co-incident with the casing being slotted longitudinally of the casing, a lamp arranged at the inner end of the casing and disposed for having its rays projected into the body portion, connections for said light extending within the casing and substantially filling the same, and a cover or housing for the light closing the inner end of the slot.

6. In a speculum, a hollow substantially cylindrical body portion, a lamp therein, and means extending longitudinally of and entirely within the body portion for retaining the lamp rigidly against lateral movement.

7. In a speculum, a hollow, substantially cylindrical body portion, a lamp arranged therein, a guide for the lamp, and means arranged entirely within the body portion and

engaging the guide for rigidly retaining the lamp in position.

8. In a speculum, a hollow, cylindrical body portion, a casing arranged in the body portion and extending longitudinally thereof, the wall of the body portion being slotted longitudinally along the casing, and light connections removably arranged in said casing and closing said slot.

9. In a speculum, a hollow, cylindrical body portion, a guide arranged entirely within the body portion, and light connections slidably and removably mounted in said guide and adapted to support a light rigidly against lateral movement.

10. In a speculum, a hollow, cylindrical body portion slotted longitudinally, a guiding casing extending longitudinally of the body portion and opening into the slot thereof, and lamp carrying means removably arranged within said guiding casing and substantially filling the same, said lamp carrying means being provided with a transversely curved surface lying in and extending throughout the length of the slot.

11. In a speculum, a substantially cylindrical, hollow body portion, an under-cut guide way casing arranged therein and formed with an opening along the length of the body portion, and a light connection casing fitted within said guide way and closing said opening.

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

WILLIAM MEYER.

Witnesses:

JOHN T. POWER,

EDWARD V. PETERSON.