(No Model.)

E. T. STARR.

ELECTRIC LIGHT SPECULUM.

No. 300,525. Patented June 17, 1884.

Fig. 1.

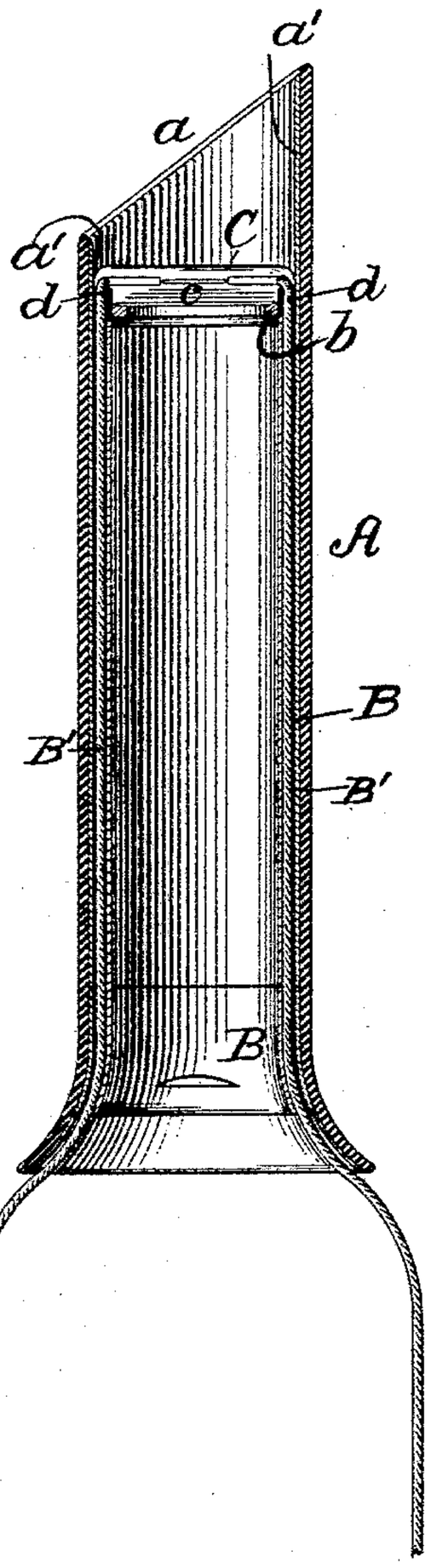


Fig. 2.

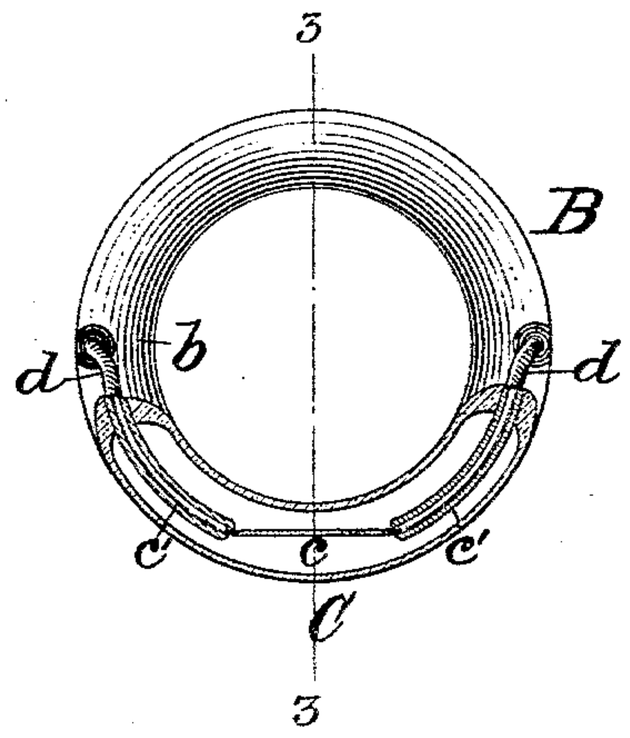


Fig. 3.

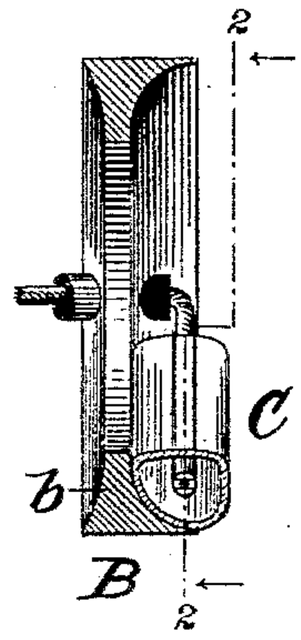
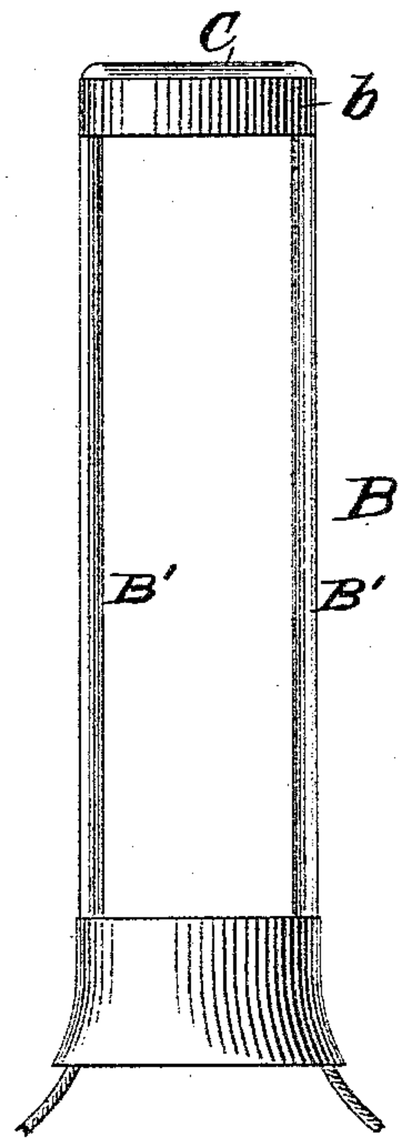


Fig. 4.



WITNESSES:

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By his Attorney

Wm C. Dayton

UNITED STATES PATENT OFFICE.

ELI T. STARR, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO THE S. S. WHITE DENTAL MANUFACTURING COMPANY, OF SAME PLACE.

ELECTRIC-LIGHT SPECULUM.

SPECIFICATION forming part of Letters Patent No. 300,525, dated June 17, 1884.

Application filed February 11, 1884. (No model.)

To all whom it may concern:

Be it known that I, ELI T. STARR, of the city and county of Philadelphia, in the State of Pennsylvania, have invented certain new and useful Improvements in Electric-Light Speculums, of which the following is a specification.

My invention relates to speculums or instruments for facilitating the examination of the cavities of the human body, and particularly to speculums for use in obstetrical and similar operations, such as the examination of the wombs of women.

The object of my invention is to provide a speculum carrying an electric lamp which may be inserted into the cavity to light it up, and thereby enable the surgeon to fully, clearly, and accurately examine the interior of the cavity or passage and walls thereof.

The subject-matter claimed is particularly pointed out at the close of the specification.

In the accompanying drawings I have shown my improvements as embodied in the best way now known to me. Some of my said improvements may be used without the others.

In said drawings, Figure 1 is a longitudinal section through the speculum. Fig. 2 is a section therethrough on the line 2 2 of Fig. 3. Fig. 3 is a section through a portion of the device on the lines 3 3 of Fig. 2; and Fig. 4 is a view of the lamp-carrying frame of the speculum, removable and adjustable relatively to the casing or guard thereof.

A preferably tubular casing or guard, A, having a preferably diagonally or obliquely cut end, *a*, as usual, so as to have an opening or open space at the side of the casing, is provided with a reflecting, mirrored, or polished surface, *a'*. This casing or guard may be of hard rubber (or of other suitable material, but a non-conducting material is almost essential) in order to avoid painful heating and suffering to the patient. A frame, B, is fitted so as to be adjustable back and forth, and also axially, in said casing, and carries at its front end an incandescent electric lamp, C. The lamp-globe is preferably curved or semicircular, so as to lie behind a ring or abutment, *b*, constituting the front end of the frame B, and thereby be out of the line of vision of the surgeon or operator looking through the speculum. The globe contains a suitable filament or "burner," *c*—a carbon filament, for instance—sealed therein, the globe being, by preference, a vacuum-globe, as is common in the construction of incandescent electric lamps. The incandescent portion of the burner or filament is held between the lamp-terminals *c' c'*, as usual, for instance, and these terminals outside the globe are connected with the terminals of the circuit-wires *d d*, so as to securely retain the lamp in place at the front end of the frame B.

The manner of connecting the lamp with the circuit-wires is immaterial, so long as a secure and suitable connection is made. The circuit-wires are preferably run through the speculum to the lamp-terminals at the front end of the lamp-carrying frame, and lie in suitable longitudinal grooves in the side bars or rods, B' B', of said frame, so as to be out of the way. Said frame B is preferably made of metal, and is adjustable, as before stated, so that it may be moved back and forth and turned axially to throw the light-rays or concentrate them at the desired point. The circuit-wires are preferably the usual flexible insulated wires.

Instead of the casing or guard A being made of hard rubber, for example, it may be made of glass suitably annealed, so that not only the cavity in front of the lamp may be exposed, but also the cavity throughout the whole distance traversed by the speculum, or to the extent to which the speculum may be inserted.

The outer or butt end of the speculum may be provided with suitable devices for readily making and breaking the circuit; but the organization of such devices may be effected in so many different ways that I have deemed it unnecessary to show such make-and-break devices in connection with my improved instrument. Many forms of such devices are well known to electricians. It will, of course, be understood that a suitable battery or generator will be employed to furnish current to the lamp, and that the circuit-wires lead therefrom to the speculum.

From the above description of my inven-

tion it will be seen that I have provided a speculum for the use of surgeons by which they may examine the cavities of the body with accuracy and at any time, night or day. The lamp gives a powerful light, which may be directed to the point desired, while there is virtually no heat. The examination can therefore be made without danger or pain to the patient. The organization is such, also, that there is no glare in the eyes of the operator.

I am aware of the patent of Nitze, of July 29, 1879, and do not claim herein anything shown in said patent. In that patent there are shown and described several forms of electric-light speculums; but the casing inclosing the electric light is of metal, and a water-circulating arrangement is used to prevent the heating of the body when the speculum is introduced into the cavity therein. I make use of no such arrangements, but, on the contrary, dispense entirely with the water-circulating device by the employment of a non-conducting casing for the electric light or lamp.

I claim herein—

1. An insulating and heat non-conducting casing—such as a hard-rubber casing—containing and carrying an incandescent electric lamp, substantially as described.

2. An insulating and heat non-conducting casing—such as a hard-rubber casing—provided with a reflecting lining or interior surface, and containing and carrying an incandescent electric lamp, and said casing being also provided with an opening therein to permit the passage of the light of the lamp, substantially as described.

3. A tubular non-conducting casing surrounding an incandescent electric lamp, said casing being open at its front end to permit the passage of the light-rays of said lamp, substantially as described.

4. The semicircular incandescent electric lamp, consisting of the semicircular vacuum-casing and the inclosed filament or incandescent body sealed therein, substantially as described.

5. A tubular transparent speculum-casing—such as a glass casing—substantially as described, whereby the cavity in which the speculum is inserted may be inspected in different directions through the walls of the casing, substantially as described.

6. A tubular transparent speculum casing or guard—such as a glass casing or guard—carrying an incandescent vacuum or inclosed electric lamp, substantially as described.

7. An electric-light speculum, consisting of a tubular or open casing fitted near its front end with a shoulder or abutment projecting into the bore of the casing, and an incandescent electric lamp fitted in front of said abutment, so as to be out of the line of vision of the operator in looking through said casing, substantially as described.

In testimony whereof I have hereunto subscribed my name this 8th day of February, A. D. 1884.

ELI T. STARR.

Witnesses:
SAMUEL E. STARR,
P. GEO. VINSON, Jr.