G. C. WERNER.

ASEPTIC DEFLECTOR LAMP.

APPLICATION FILED APR. 11, 1907.

936,499. Patented Oct. 12, 1909.

Fig. 8.

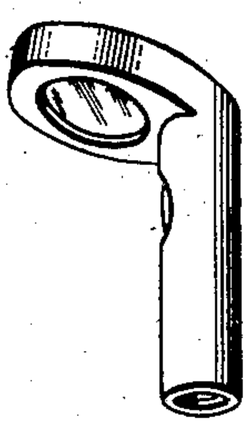


Fig. 3.

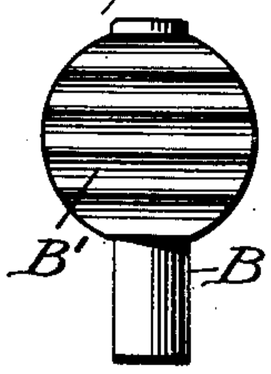
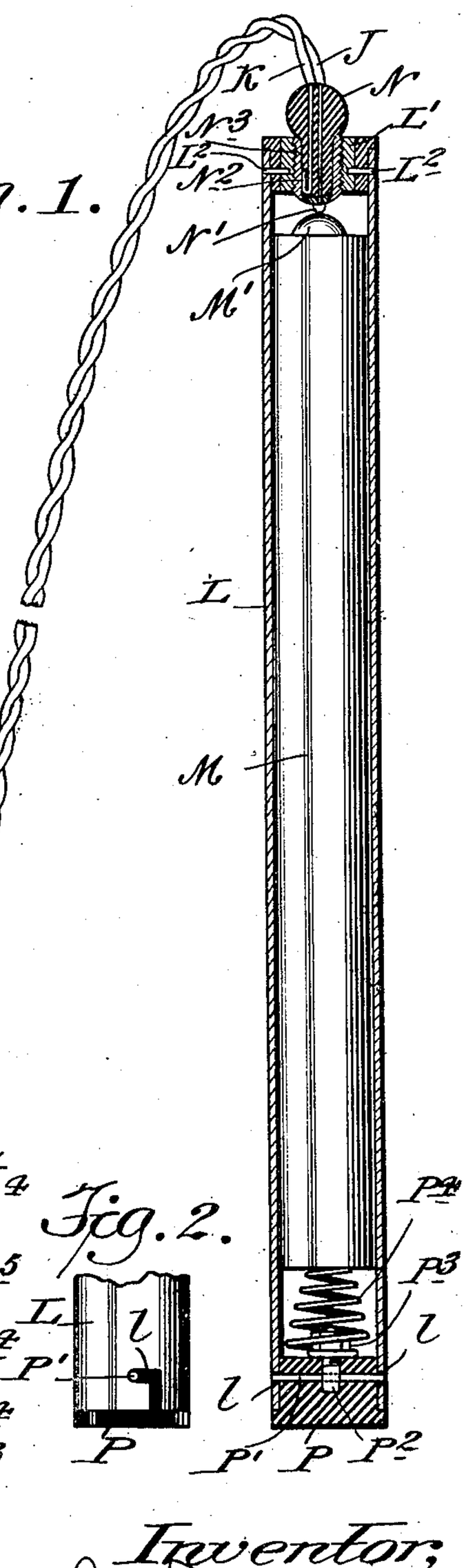


Fig. 1.



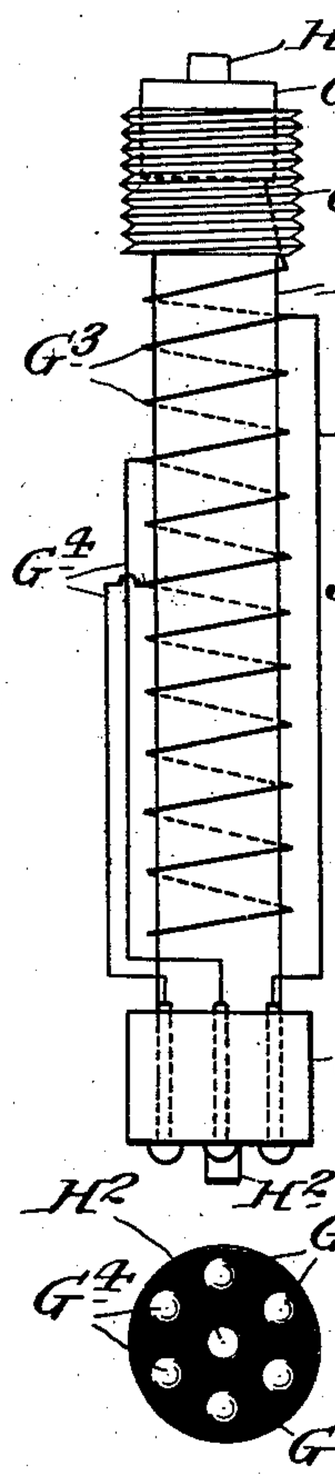
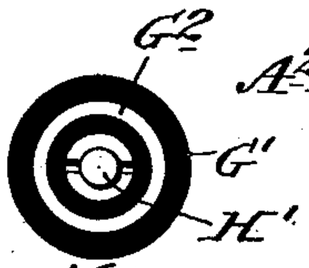


Fig. 7.

Fig. 4.



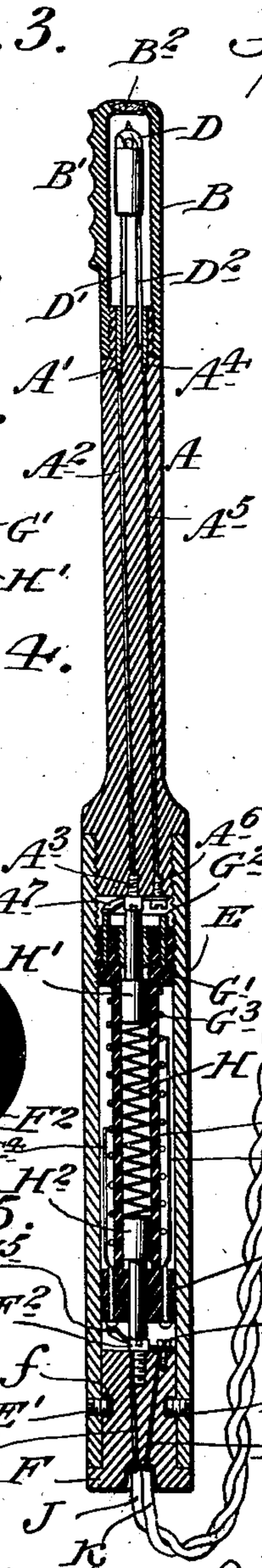


Fig. 5.

Fig. 6.

Fig. 2.

Witnesses:-

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UNITED STATES PATENT OFFICE.

GEORGE C. WERNER, OF NEW YORK, N. Y.

ASEPTIC DEFLECTOR-LAMP.

936,499. Specification of Letters Patent. Patented Oct. 12, 1909.

Application filed April 11, 1907. Serial No. 367,536.

To all whom it may concern:

Be it known that I, GEORGE C. WERNER, a citizen of the United States, residing in the borough of Brooklyn, in the city and State of New York, have invented a certain new and useful Improvement in Lamps of the class sometimes termed "Aseptic Deflector-Lamps," of which the following is a specification.

The improved apparatus is capable of use for many purposes where a small amount of light will suffice. It is more particularly intended for surgical use in inspecting the interior of the throat, and also of other parts, as the mouth, nose and ears. I have devised a construction which allows of easy and thorough cleaning.

My invention provides means by which physicians may rapidly and conveniently vary the intensity of the light. With incandescent filaments a reduction of the current produces a red effect, and my apparatus allows the color to be thus varied within wide limits which greatly facilitates examinations for diphtheritic, inflammatory or cankerous affections, in which the affected parts present different colors. It permits several changes to be made during one insertion.

The following is a description of what I consider the best means of carrying out the invention.

The accompanying drawing forms a part of this specification.

Figure 1 is a central vertical section with the battery and flexible conductor in elevation. Fig. 2 is an elevation corresponding to the portion of the battery holder immediately adjacent on the right thereof. Fig. 3 is an elevation of another portion immediately adjacent on the right thereof. Fig. 4 is a top view of a portion, of twice the size it appears in Fig. 1. Fig. 5 is a corresponding view of another portion on the same large scale. Fig. 6 is a bottom view of the same spool-shaped portion on an intermediate scale, and Fig. 7 is a diagrammatic representation of the two parts shown in Figs. 4, 5 and 6, and other intermediate and connecting parts. Fig. 8 is a perspective view of a portion which may be substituted for the parts shown in Fig. 3.

Similar letters of reference indicate corresponding parts in all the figures where they appear.

I will describe the construction as conditioned for use but with the parts held in an upright position the working end upward.

A is the shank or main stem of the operating part a little reduced in diameter and screw-threaded near its upper end.

A^1 is a thin piece of copper or other good conducting material, a fraction of a hollow cylinder inserted in a corresponding recess.

A^2 is a conducting wire making contact therewith, extending longitudinally through the shank A and making contact with a screw A^3 of conducting material at its lower end.

A^4 is a piece of metal corresponding to A^1 and set near it in the shank. A^5 is a wire connecting it with a conducting screw A^6. A curved spring A^7 of material making also a good conductor is secured by this screw in the position shown.

B is a removable cap adapted to be firmly engaged with such screw-thread and having one face B^1 widened and horizontally ridged forming a plate to serve usefully as a means for pressing down the tongue of the patient in examining the throat. B^2 is a lens set in an aperture in the top of this cap B.

D is an incandescent electric bulb of the proper small size and equipped with a suitable filament to produce light. It may be what is sometimes known as a scarf-pin bulb. D^1 and D^2 are parallel conductors extending therefrom adapted to serve, one for the positive and the other for the negative current in the operating of the lamp. Pockets are provided in the upper end of the shank A to receive these conductors and hold them in contact each with one of the plates A^1, A^4.

While the cap B is in place the bulb is protected. When the cap is unscrewed and removed, the bulb is accessible and by being gently pulled by the thumb and finger the wires D^1 D^2 are drawn out from their sockets and the bulb is thus detached. Such detaching is useful for repairs or exchange.

The lower end of the shank A is enlarged and screw-threaded as plainly shown in Fig. 1 and receives a hollow cylindrical casing E of sufficient length to afford room for a cylindrical rheostat to be presently described. The lower end of E is closed by a removable and revoluble plug or swivel F which has a groove *f* extending quite around at its mid-length which groove receives loosely the points of two screws E^1 and E^4 set in the casing E. The swivel F is of non-

conducting material but is traversed longitudinally by a copper wire F^1 which contacts with a metallic screw F^2 at the inner end. It is also traversed, well insulated therefrom, by another wire F^3 which contacts with a screw F^4 which latter contacts with and firmly holds a spring F^5 of good conducting material.

G is a spool-shaped piece of hard rubber which performs important functions. Its ends G^1, G^5 are larger than the mid-length portion and fit tightly in the interior of the casing E, the position being adjusted and firmly maintained by screw-threading the upper head G^1 into corresponding screw-threads cut in the interior of E. In a central bore are two movable contact pieces H^1, H^2 urged gently apart in the axial line by a helical spring H, all of conducting material. These maintain contacts under all circumstances, the movable piece H^1 at the upper end with the screw A^3 and the movable piece H^2 at the lower end with the screw F^2.

In the upper face of the upper head G^1 is partially sunk a metallic ring G^2. The spring A^7 is always in contact with the top of this ring. A wire G^3 of German silver or other feebly conducting material, contacts with its lower edge and is coiled around the contracted midlength portion of G to form a resistance coil, extending nearly, but not quite the whole length. A series of independent straight wires G^4, shown as six in number, are firmly set in the lower head G^5, their lower ends projecting slightly below and their upper ends extending upward in the narrow annular space between the resistance-coil G^3 and the interior of the casing E. These wires G^4 are of copper or other good conducting metal. One extends the whole length and contacts directly with the ring G^2 at any convenient point not shown. The other five extend upward to different lengths and are made to electrically contact at different heights on the helical resistance wire G^3. The parts, except where required to contact, are covered with an insulating coat.

J and K are respectively the positive and negative insulated wires twisted lightly together to serve as flexible conductors for currents, the wire J contacting with the wire F^1 and the wire K contacting with the wire F^3. The battery, to be presently described, sends the positive current through the practically continuous wires J and F^1 to the screw F^2. Thence it flows through the lower contact H^2, the spring-conductor H and upper contact H^1 to the screw A^3 and wire A^2 and thence through the plate-contact A^1 into the wire D^1, and thence through the filament in the bulb D, and produces the light which shines out through the lens B^2 and performs the useful work required.

The negative or return current flows down through the wire D^2, contact A^4 wire A^5 and screw A^6 to the curved spring A^7. This gives the negative current to the ring G^2 and this to the resistance-coil G^3 down which it travels to a variable distance according as the revoluble swivel F has been turned so as to bring its spring-contact F^5 into engagement with one or another of the series of wires G^4, and thus afford an easier route through a good conductor for a greater or lesser part of the way.

As shown in Fig. 1 the swivel F has been turned into such position that its curved spring F^5 is in contact with one of the conducting wires G^4,—the one which contacts with a turn of the wire G^3 at about the middle height. The current will flow with the moderate force due to the resistance imposed by traveling one-half the length of the resistance coil G^3. If the swivel F is next turned so as to bring its spring-contact F^5 into engagement with the longer wire G^4 shown on the right, the resistance will be greatly decreased and the light made correspondingly more intense, because the current will now have to traverse but a small portion of the resistance coil G^3. Thus the swivel F and its connections as arranged serve as a rheostat specially constructed to serve in a slender tube, by which to regulate the intensity of the light. The lower ends of the wires G^4 are shown as "upset" or thickened, producing on each a head with its lower face rounded. They are mainly alike but one is less prominent and the form of the spring F^5 is such that by turning the swivel F the spring may contact with that wire and give a weak light, or if preferred by turning F a little beyond that position the spring F^5 will rest on the non-conducting material of G^5 and the circuit will be open,—there will be no light and no waste of the battery power. This is the condition which will obtain all the time when the apparatus is not in use.

My dry battery M is inclosed in a metallic casing E which serves both as a protection and a conductor. Its positive terminal M^1 projects at the top and gives its current to a contact N^1 insulated in a pear-shaped plug N of wood or other tolerable non-conductor, and making electrical contact with the positive wire J of the flexible conductor leading to the wire F^1 in the swivel F. The negative terminal is at the lower end of my battery,—the current reaches it by using the case L as a conductor. The wire K brings the returning or negative current to the contact N^2 which traverses the plug N completely insulated, and delivers the current to a metal screw-threaded sleeve N^3 which can be removed with the plug when required. This makes ample contact with the inclosing threaded sleeve L^1 which is

mechanically secured to the metal case L and also electrically contacted therewith by pins L^2.

The lower part of the case L is formed with two angular open slots *l*. A plug of wood P diametrically traversed by a metal pin P^1 matches in the bottom by what is sometimes termed a bayonet-joint,—engaging or releasing the casing L as it is partially turned. This plug carries a screw-stud P^2 on which is a nut P^3 securing a spring conductor P^4. It will be seen that the returning current received from the wire K through the contact N^2 flows radially outward through the engaged metal sleeves L^1 and N^3 and thence through the pins L^2 to the whole body of the casing L and thence radially inward by pin P^1 and upward through the stud P^2 and spring-conductor P^4 to the negative terminal in the center of the base of the battery M.

It is of advantage in protecting the bulb and obtaining access and removing when required to make the working end of the casing and the parts carried thereon, removable. I attach importance to the broad plate B^1 being formed integral with the cap B and ridged transversely because it requires no additional part to be manipulated to depress and hold the tongue of the patient. I attach importance to carrying a rheostat in the instrument because it well controls the amount of the light and allows the color to be varied. I attach importance to the peculiar construction of the rheostat because it allows of efficient serving in the available space and is specially simple in operation and also allows the device to serve as a switch to entirely stop the flow, and I attach importance to the long and slender form of the battery and to making the casing L a conductor as combined because it simplifies and cheapens the construction and allows the inclosing case and the stem to be packed side by side in a small space suitable for carrying in the pocket without detaching the parts E and L from each other.

Fig. 8 shows a tip or cap which can be substituted for the part B in some examinations, and especially for some otherwise difficult dental operations. In this the light from the bulb is thrown outward through a lens in a lateral aperture, and shines strongly on the tooth or other part not otherwise visible, and the view thereof is, by an attached mirror reflected backward to the eye of the operator.

Modifications may be made without departing from the principle or sacrificing the advantages of the invention. Different sizes may be made but a single size will serve for a wide range of applications.

Parts of the invention may be used without the whole. The material may be varied. I can use hard rubber or the hard insulating material known in the electrical trade as "fiber" for the insulating parts, and for other parts can use metal or other air-tight and water-tight material which will endure heat, for thorough disinfecting.

I claim as my invention:—

1. In an aseptic lamp the combination of a longitudinally extended casing inclosing a battery of small cross section and relatively great length, a slender stem carrying a bulb and insulated electric conductors, a revoluble plug and a rheostat having wires of different lengths revolved therewith, combined substantially as herein specified.

2. In an aseptic lamp the combination of a long and slender battery, a flexible electric conductor from the same to a slender stem, an extended plate on such stem provided with transverse ridges, an incandescent electric lamp in its interior, a removable cap carrying a lens and adapted to protect such lamp, a helical wire H, a swivel confined by detachable screws in such stem and a rheostat formed by the aid of wires of different lengths carried in such swivel and contacting with such helical wire, and a curved spring F^5 kept in constant connection with the battery, all adapted to serve substantially as herein specified.

Signed at New York city this 9 day of April 1907.

GEORGE C. WERNER.

Witnesses:

THOMAS DREW STETSON,

S. H. STODDER.