COMBINATION IRRIGATION AND ULTRAVIOLET IRRADIATION TUBE

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Fig. 1

Fig. 2

Fig. 3

Fig. 4

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This invention relates to ultraviolet ray therapeutic appliances, and more particularly to a device especially adapted for use in the treatment of the urethra and bladder.

The use of ultraviolet light in the treatment of certain diseases of the urethra and bladder is well known, but the usefulness and convenience of such devices has been heretofore limited because the extreme painfulness of the conditions for which such treatment is indicated often prohibits the use of unnecessary instrumentation; and also the emptied bladder contracts into many folds and crevices in such a manner that the therapeutic ultraviolet light cannot adequately reach the desired surfaces.

It is, therefore, an object of my invention to provide a device for irrigating and irradiating the urethra and bladder in the therapeutic treatment thereof, which device reduces instrumentation to a minimum, it only being necessary to simply insert and remove the device from the parts being treated.

A further object is the provision of a combined irrigating and irradiating device for the therapeutic treatment of the urethra and bladder, and the like, which device, while in place, enables the bladder to be first drained and subsequently irrigated, either before, during or after the ultraviolet ray application, and also enables the bladder to be insufflated with air or with a gas, allowing the ultraviolet rays to reach all portions of the interior surface of the bladder.

These and other advantageous objects, which will later appear, are accomplished by the simple and practical construction and arrangement of parts hereinafter described and exhibited in the accompanying drawings, forming part hereof, and in which:

Fig. 1 is an elevational view of the device,

Fig. 2 is a view showing the device inserted into an emptied bladder,

Fig. 3 shows the device inserted into an inflated bladder, and

Fig. 4 is an enlarged transverse sectional view taken on line x—x of Fig. 1.

My invention consists of a combination appliance allowing irrigating fluid to pass into the bladder, the fluid being subject to intense ultraviolet irradiation while it passes through the appliance and hence irradiated liquids may also be utilized as irrigants. The general arrangement of my invention is illustrated in the accompanying drawing, but the shape of the appliance shown may be modified in many ways without departing from the spirit of the invention.

Referring to the drawings, the device is shown to include a curved tube 4 permeable to ultraviolet light and therefore, preferably made of fused quartz glass equipped with electrodes 5, 6, and having passages 7, 8, connected with these electrodes throughout the length of the appliance such that an electric current in the form of a discharge can pass from one electrode throughout the length of the appliance and back to the other electrode or electrodes. A separate passage 9 is provided within the outer shell such that a liquid or gas can be introduced through an orifice 10 near the support for the electrodes and discharged through an orifice 11 at or near the point of the appliance.

When the appliance is introduced through the urethra and part way into the bladder a passageway is provided at the same time for liquids or gas to be injected through the appliance into the bladder. The outer shell is made of clear fused quartz and provided with the necessary passageways for the discharge within the shell. The electrodes may be of any form suitable for high voltage electric current, and are commonly made of nickel or aluminum cylinders, and are connected to the outside through any of the well known forms of vacuum tight seals. The tube is highly exhausted of its air and filled with a small quantity of mercury and a few millimeters of inert gas such as argon. Such a discharge tube requires a potential of several hundred volts at a few millamperes of current for its operation, and the electric discharge produces ultraviolet rays in sufficient quantities to be effective for the proper treatment of the urethra and bladder, and the like.

The independent passageway 9 through the shell for the introduction of fluid consists of a quartz tube of small bore so built into the appliance that it can be connected to a supply of fluid near the supporting structure and the fluid forced out an exit at or near the tip of the tube.

The foregoing disclosure is to be regarded as descriptive and illustrative only, and not as restrictive or limiting of the invention, of which obviously an embodiment may be constructed including many modifications without departing from the general scope herein indicated and noted in the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. An ultraviolet ray therapeutic device, comprising a relatively slender shell made of a material permeable to ultraviolet rays, electrodes
mounted in said shell, said shell having electric discharge passages throughout its length connecting said electrodes, said shell having an external opening near the electrodes and an external opening near the tip of the shell and an independent passage communicating with said openings.

2. An ultraviolet ray therapeutic device, comprising a slender shell having electric discharge passages extending throughout the length thereof, electrodes mounted at one end of the shell and connected with said passages, said shell having an independent passage communicating with the exterior of the shell through which liquid or gas can be passed.

3. A device for irradiating body orifices with ultraviolet light, comprising a slender fused quartz shell having electric discharge passages extending throughout its length, electrodes mounted in the shell and connected with said passages, said passages having a filling of mercury vapor and an inert gas at a low pressure, said shell having an independent passage extending the length thereof and communicating with its exterior to enable liquids or gases to be passed through the shell.

4. An orifical device comprising a light-permeable shell equipped with electrodes and electric discharge passages extending throughout the length thereof, said shell having an independent passageway with an external opening at a point near the electrodes and extending through the shell to an external opening at a point near the extended tip.

5. An appliance for the irradiation of body orifices with ultraviolet light comprising an outer shell which contains passageways for an electric discharge throughout its length and also having an independent passageway constructed so as to permit the passage of liquids through the shell and out at a point near the tip end of the shell.

6. An appliance for the irradiation of the inner walls of the urethra and bladder with ultraviolet light, comprising a slender fused quartz shell in which the light is generated within and throughout the length thereof by a high voltage electric discharge through mercury vapor and argon gas, said shell having an independent passageway communicating with external openings at each end of the shell.

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