

June 29, 1937.

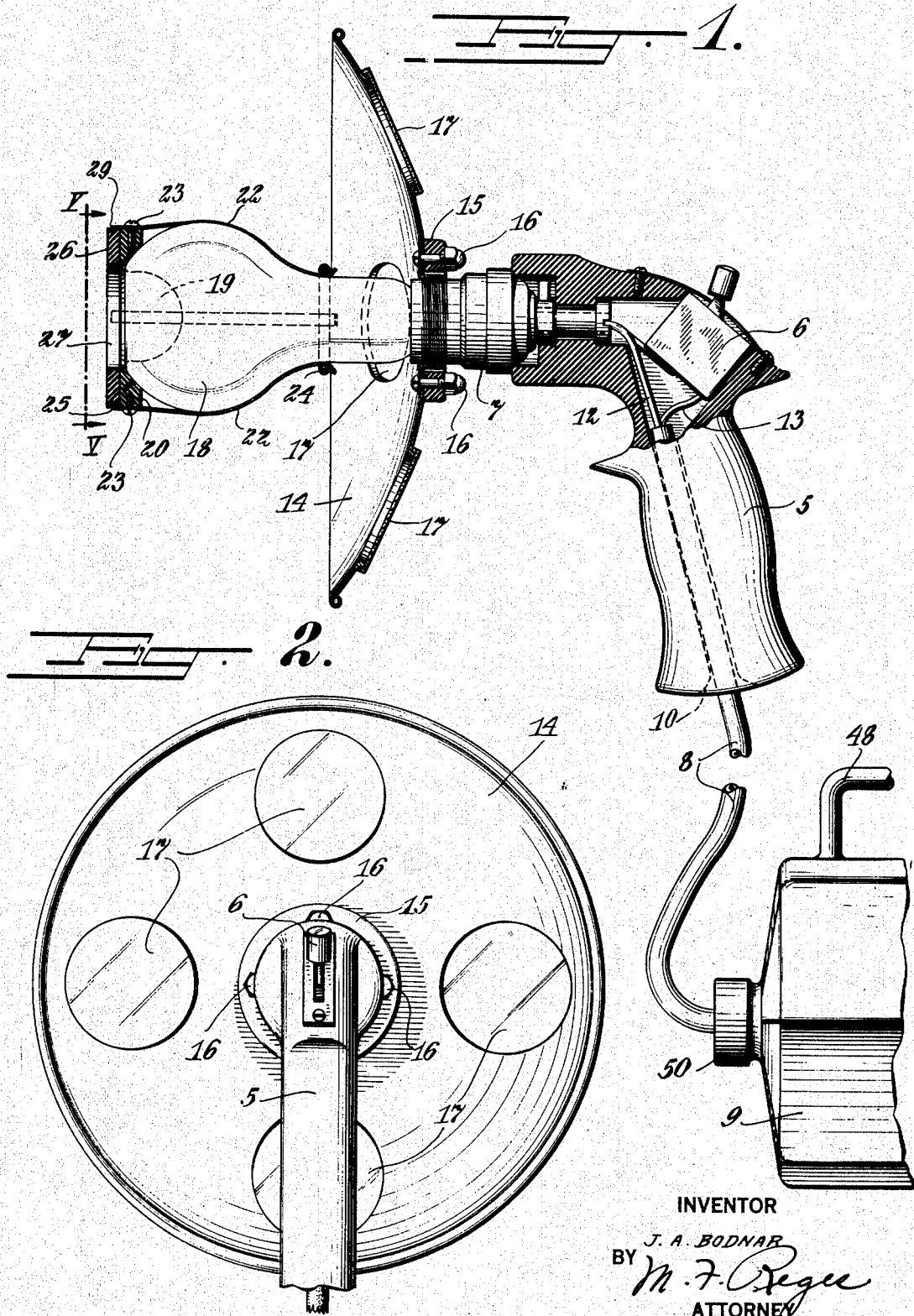
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ULTRAVIOLET APPARATUS

Filed Aug. 14, 1935

2 Sheets-Sheet 1



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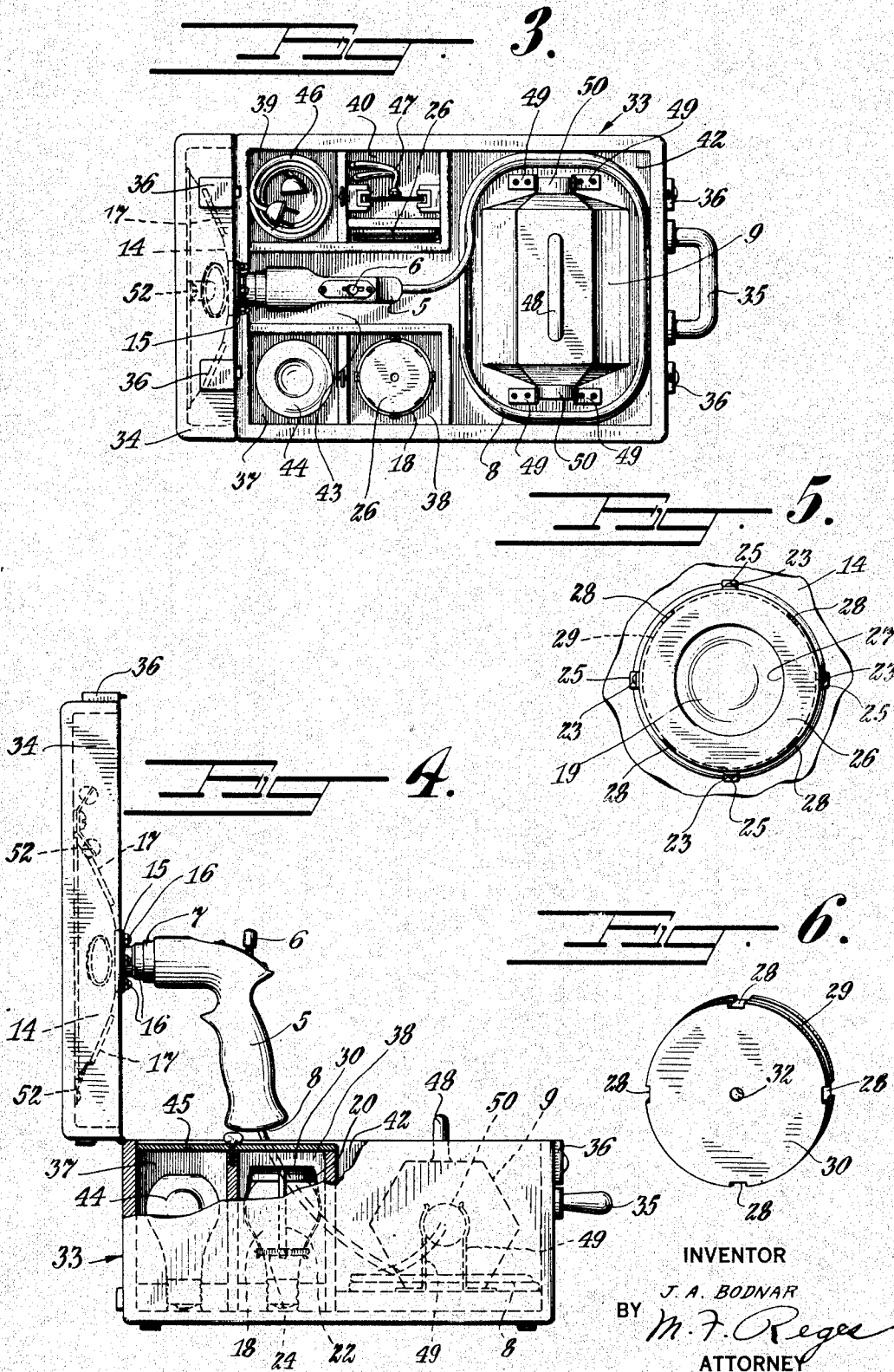
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UNITED STATES PATENT OFFICE

2,085,627

ULTRAVIOLET APPARATUS

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5 Claims. (Cl. 128—396)

My present invention relates to therapeutic apparatus and has particular reference to a portable and compact device which may be readily transported by a user from one place to another and employed with facility for subjecting a patient to the beneficial effects of ultra-violet radiations.

The beneficial results of ultra-violet radiations both for heliotherapy and physiotherapy are well known. Heretofore an ultra-violet apparatus has usually comprised a cumbersome lamp stand provided with a suitable reflector and an ultra-violet lamp. It is customary for a patient to sit or lie upon a suitable support under the rays from the lamp usually in the office of a physician. Thus, not only is this exceedingly inconvenient at times, but it is not infrequent for the attending physician or technician to be inadvertently subjected to such rays.

It is accordingly an object of my present invention to provide a compact portable ultra-violet apparatus which may be transported by a physician or technician with facility from one place to another.

Another object of my present invention is the provision of a compact portable ultra-violet apparatus wherein the lamp unit itself together with instrumentalities for energizing the same are housed within a portable container and may be readily removed therefrom for the administration of a treatment.

Another object of my present invention is the provision of an ultra-violet apparatus wherein the lamp unit is detachably secured to the closure member for a portable container having a plurality of compartments in which are disposed various accessories for the apparatus and into one of which the lamp unit is moved upon closing of the container by the closure member or lid.

A further object of my present invention is the provision of a lamp unit provided with a handle in the form of a pistol grip having a suitable switch and socket for supporting an ultra-violet lamp together with an ultra-violet impervious reflecting shield which, while directing the radiations away from the user, is provided with several windows pervious to visible radiations, but not to ultra-violet to enable the user to observe the distance the lamp is disposed from the skin of a patient without being subjected to such radiations.

Still further objects of my invention will become obvious to those skilled in the art by reference to the accompanying drawings wherein,

Figure 1 is a side sectional view of the lamp unit constructed in accordance with my present

invention and showing a portion of the portable transformer for supplying electrical energy to the lamp.

Fig. 2 is a rear elevational view of the lamp unit as shown in Fig. 1.

Fig. 3 is a top plan view of the entire apparatus with the closure member or lid raised and showing the various accessories and parts of the lamp unit as housed in the compact portable container.

Fig. 4 is a side view of the entire apparatus as shown in Fig. 3.

Fig. 5 is a partial end view of the lamp unit looking in the direction of the arrows V—V shown in Fig. 1, and

Fig. 6 is an elevational view of a guard for the ultra-violet lamp when not in use and comprises one of the accessories housed within one compartment of the container.

Referring now to the drawings in detail I have shown in Fig. 1 my lamp unit which comprises a handle 5 of suitable material, such as hard rubber or a phenolic condensation product, having a configuration simulating a pistol grip so as to be readily gripped by the hand of a user and provided with a switch 6 and a socket 7 of the usual type. An insulated cable 8 extends from an appropriate source of electrical energy 9, which is preferably a reactance, but may be a transformer for operation on alternating current, or a ballast resistance for direct current operation, but for the sake of simplicity I shall throughout the remainder of my specification and claims refer to such source as a transformer. A bore 10 is provided in the handle 5 and one of the electrical conductors 12 of the cable 8 is connected directly to one terminal of the socket 7 while the remaining conductor 13 is broken through the switch 6 so that the latter controls the supply of energy from the transformer to the socket.

A reflecting shield 14 provided with an annular collar or the like 15 rigidly secured thereto as by suitable bolts 16 is also supported by the handle 5 by the threaded engagement of the collar 15 with the shell of the socket 7. This reflecting shield being of any suitable metal is impervious to visible and ultra-violet radiations and has a sufficient radii of curvature together with a reflecting surface on the side opposite to the handle, such as to direct radiations away from the hand of the user during the administration of a treatment. A plurality of windows 17 are provided in this reflecting shield, which although impervious to ultraviolet light are nevertheless pervious to visible light, to enable the user to observe when the ultra-violet lamp is energized as

well as the distance between the latter and a patient.

An ultra-violet lamp 18 is arranged to threadably engage the socket 7 and may be of any suitable type capable of producing ultra-violet radiations of a desired intensity and wave length, such for example as the lamp shown and claimed in Patent No. 1,917,848 issued July 11, 1933 to John W. Marden et al. and assigned to the Westinghouse Lamp Co., which lamp is provided with a thin recessed window portion 19 in the end thereof more pervious to ultra-violet radiations than the remainder of the envelope. Surrounding the end of the lamp 18 is an annular collar 20 having a slightly tapered surface conforming to the contour of the envelope of the lamp. This is held in firm contact with the end of the envelope through the medium of a plurality of resilient fingers or the like 22 secured to the collar 20, such as by screws 23, and extending over the envelope in the direction of its longitudinal axis with the ends of the fingers 22 being held against the envelope by a retaining ring 24 which may be in the form of a coiled spring, thus forming a guard for the lamp. The fingers 22 extend slightly beyond the collar 20 and are provided with angular portions 25 bent inwardly for the purpose of engaging a disc 26 of suitable heat resisting material for the purpose of preventing the lamp from actually contacting the patient and causing discomfort of any nature.

This disc 26 is provided with an opening 27 of approximately the same diameter as that of the thin window portion 19 of the lamp for the egress of radiations as well as a plurality of transverse slots 28 (Figs. 5 and 6) and a peripheral groove 29. In order to position the disc 26 upon the collar 20 to complete the lamp guard the angular portions 25 of the resilient fingers 22 are passed partially through the transverse slots 28 until the same align with the peripheral groove 29 after which the disc is given a slight rotary movement thus retaining the same in position.

A similar disc 30 is provided as an accessory which in most respects is identical to the disc 26 with the exception that it is provided with only a very small opening 32 serving as a vent to permit escapement of air from the recessed thin window portion 19 of the envelope in lieu of the larger opening 27 as in the disc 26. This latter disc 30 is adapted to be placed upon the lamp guard in place of the disc 26 when the lamp is not in use and completely protects the end of the lamp 18 and particularly the thin window portion 19 to prevent accidental breakage.

The lamp unit as just described together with the transformer 9 is arranged to be disposed within a portable container 33 as shown more clearly in Figs. 3 and 4. This container is provided with a closure member or lid 34 hinged thereto together with a suitable handle 35 and fasteners 36. The interior of the container is provided with a plurality of compartments 37, 38, 39, 40, 42, and 43 and the ultra-violet lamp 18 together with a spare lamp 44 are normally disposed within the compartments 37 and 38 and closed by a separate cover plate 45 (Fig. 4). Various other accessories, such as a lamp cord 46 is disposed within the compartment 39 which is employed for connecting the primary winding of the transformer 9 to a suitable source of electrical energy of the usual commercial potential, and in the compartment 40 are disposed a pair of ultra-violet impervious spectacles 47 as well as the disc 26 when replaced by the disc 30.

The transformer 9 which is provided with a suitable handle 48 for detaching the same from the container 33 is retained within the compartment by means of spring clips or the like 49 engaging hubs 50 provided on the transformer 9 housing.

The lamp unit on the other hand is secured to the underside of the closure member 34 by spring clips 52 which engage the reflecting shield 14 and all parts of this unit and particularly the pistol grip handle 5 which extend beyond the surface of the closure member or cover 34 are arranged to fit into the compartment 43 upon closure of the container. The conducting cable 8 which more or less permanently connects the secondary winding of the transformer 9 to the lamp unit may be coiled about the transformer when in the container as shown in Fig. 1. Inasmuch as the transformer 9 as well as the lamp unit is readily detachable from the container or case 33 these two members may be removed therefrom and utilized by the user at any desired location in proximity to the usual convenience outlet where electrical energy is available, by simply connecting the primary winding of this transformer thereto by the cord 46.

It can thus be readily seen by those skilled in the art that I have provided an ultra-violet apparatus of a compact portable nature which may be transported from one place to another with ease. Moreover, the various members utilized during the actual administration of a treatment are readily removable from the portable container enabling them to be employed with still greater facility at any desired location. The lamp unit itself may be readily gripped by the user so as to apply the treatment to any desired area of a patient's skin while actual contact between the lamp and patient is prevented by a suitable guard and the user can observe the proper positioning of the lamp while being shielded from stray radiation by a reflecting shield.

Although I have shown and described one embodiment of my present invention I do not desire to be limited thereto as various other modifications of the same may be made without departing from the spirit and scope of the appended claims.

Having thus described my invention I claim as novel:

1. A portable ultra-violet radiation unit comprising a handle having a configuration readily adapting the same to hand gripping by a user, a socket carried by said handle, an ultra-violet lamp adapted to be energized and to generate ultra-violet radiations within a preselected region of the spectrum disposed in said socket, a reflecting shield supported by said handle for directing the radiations emanating from said lamp in a desired direction and for preventing radiations from falling upon the hand of a user when holding said unit, and at least one window in said reflecting shield pervious to visible radiations but impervious to ultra-violet radiations to enable one to observe the positioning of said lamps without being subject to radiations from the latter.

2. A portable ultra-violet radiation unit comprising a handle having a configuration readily adapting the same to hand gripping by a user, a socket carried by said handle, an ultra-violet lamp adapted to be energized and to generate ultra-violet radiations within a preselected region of the spectrum disposed in said socket, a guard secured to said lamp for protecting the same and to prevent said lamp from contacting a patient and causing discomfort thereto during the ad-

ministration of a treatment, a reflecting shield supported by said handle for directing the radiations emanating from said lamp in a desired direction and for preventing scattered radiation from falling upon the hand of the user when holding said unit, and a window in said reflecting shield pervious to visible radiations but impervious to ultra-violet radiations to enable a user to observe the positioning of said lamp without being subject to radiations from the latter.

3. A portable ultra-violet radiation unit comprising a handle having an angularly disposed portion forming a hand grip, a socket carried by said handle, an ultra-violet lamp adapted to be energized and to generate ultra-violet radiations within a preselected region of the spectrum disposed in said socket, a source of electrical energy for energizing said lamp, a switch carried by said handle and operable by a user to electrically connect said lamp to said source, a guard secured to said lamp for protecting the same and to prevent said lamp from contacting a patient and causing discomfort thereto during the administration of a treatment, a reflecting shield supported by said handle for directing the radiations emanating from said lamp in a desired direction and for preventing scattered radiations from falling upon the hand of the user when holding said unit, and a window in said reflecting shield pervious to visible radiations but impervious to ultra-violet radiations to enable a user to observe the positioning of said lamp without being subject to radiations from the latter.

4. A portable ultra-violet radiation unit com-

prising a handle having a configuration readily adapting the same to hand gripping by a user, a socket carried by said handle, an ultra-violet lamp adapted to be energized and to generate ultra-violet radiations within a preselected region of the spectrum disposed in said socket, and a guard for said lamp comprising a disc held in contact with the envelope of said lamp by a plurality of resilient fingers extending longitudinally of said lamp and a yieldable ring surrounding the envelope of said lamp and said fingers to maintain the latter in yieldable contact with the envelope of said lamp.

5. A portable ultra-violet radiation unit comprising a handle having a configuration readily adapting the same to hand gripping by a user, a socket carried by said handle, an ultra-violet lamp adapted to be energized and to generate ultra-violet radiations within a preselected region of the spectrum disposed in said socket, and a guard for said lamp comprising a disc of heat resisting material provided with a plurality of transverse slots communicating with a peripheral groove, a plurality of resilient fingers extending longitudinally of the envelope of said lamp and detachably engaging the peripheral groove of said disc to hold the latter in firm contact with the envelope of said lamp, and a yieldable ring surrounding the envelope of said lamp and said fingers to maintain the latter in contact with the envelope of said lamp.

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