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J. A. KORENGOLD

2,297,781

LAMP STRUCTURE

Filed June 24, 1940

3 Sheets-Sheet 1

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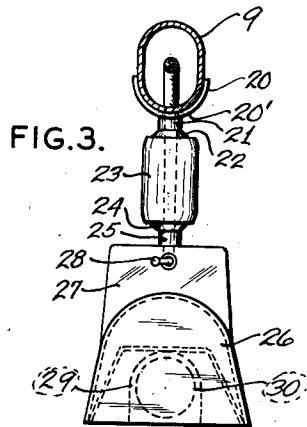
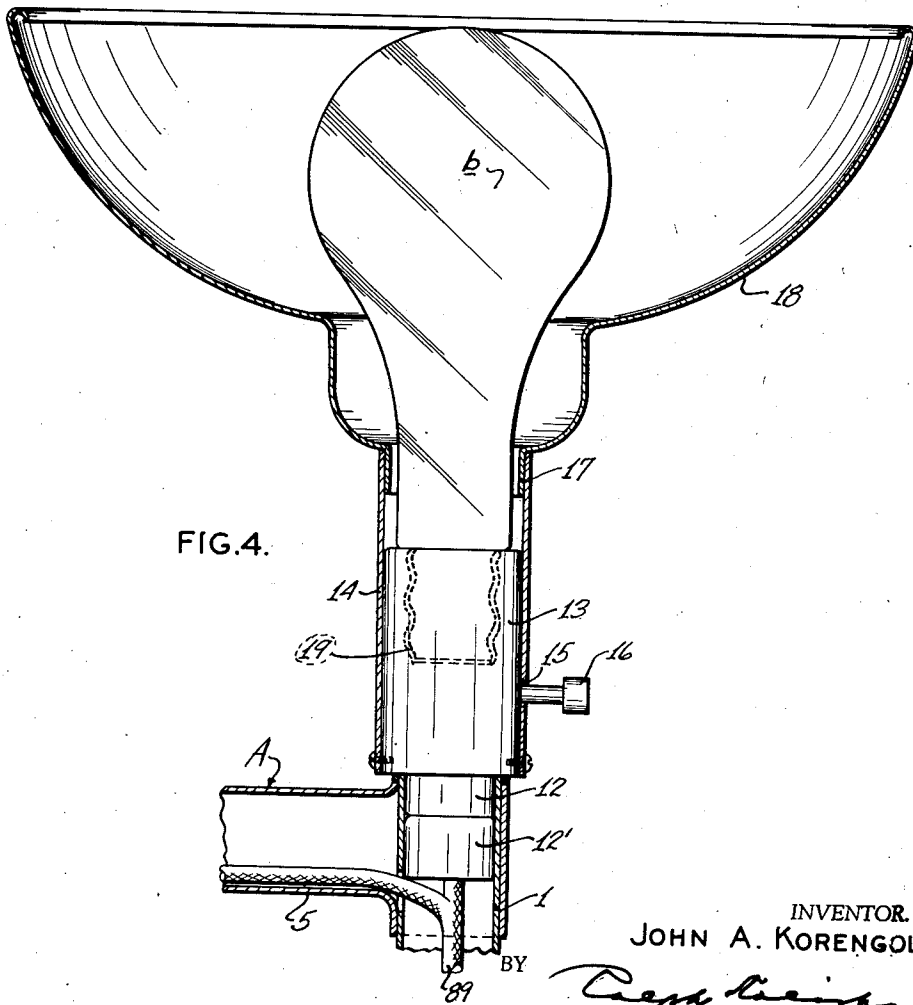
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LAMP STRUCTURE

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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

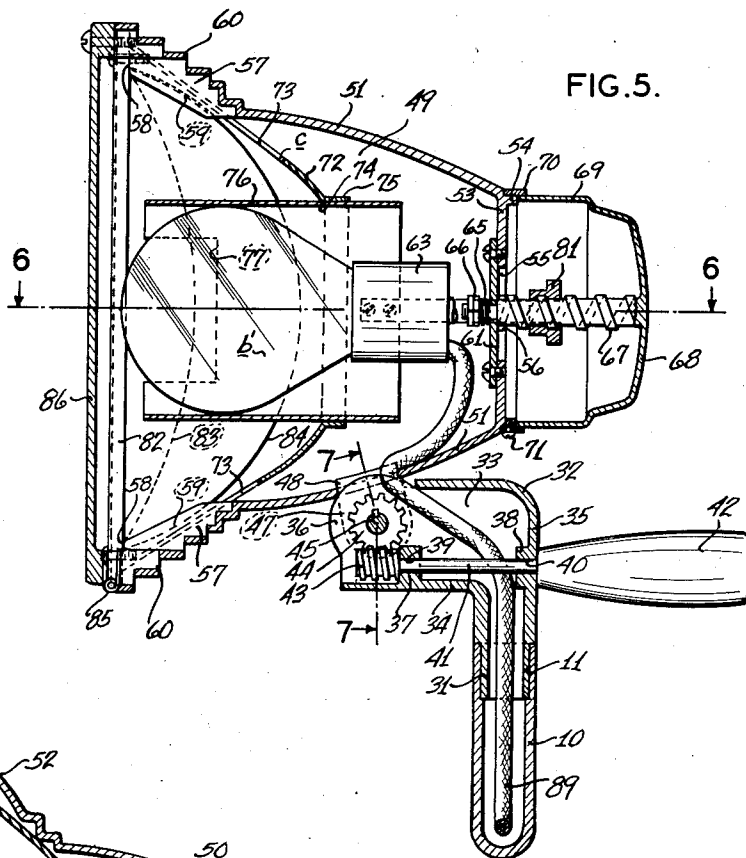


FIG. 5.

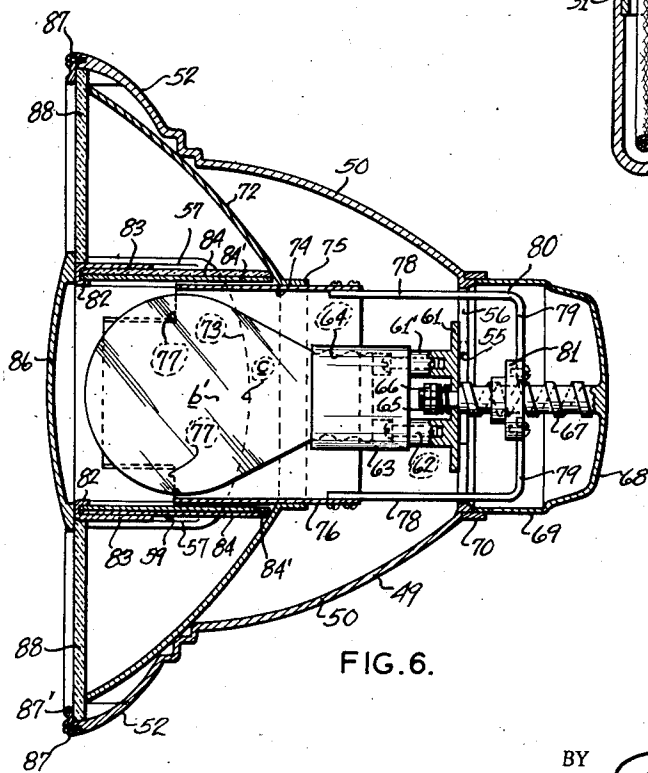


FIG. 6.

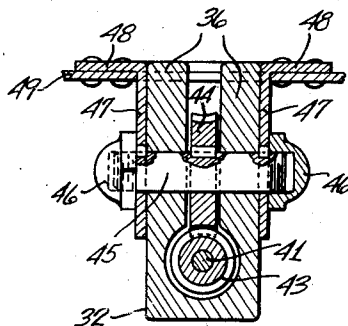


FIG. 7.

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LAMP STRUCTURE

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Application June 24, 1940, Serial No. 342,086

4 Claims. (Cl. 240—41.15)

This invention relates to certain new and useful improvements in lamp structures or so-called illuminators particularly adapted for use in dental and surgical operating rooms.

My invention has for its primary objects the provision of a lamp structure or illuminator which will afford in a single unitary structure all of the necessary types of illumination required in a dental or surgical operating room, which is rugged and durable in structure, which is attractive in appearance, which is economical in cost of construction and maintenance, and which is readily manipulable by the dentist, surgeon, or operator with a minimum of manual effort.

My invention has for a further object the provision of an illuminator for dental and surgical operations, which may be readily adjusted for projecting its beam at any desired angle or in any selected direction, which may be varied in intensity, which produces a minimum of heat, which produces a beam of substantially rectangular cross-section and uniform intensity, and which is highly efficient in the performance of its stated functions.

And with the above and other objects in view, my invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (3 sheets)—

Figure 1 is a reduced perspective view of a lamp structure or illuminator constructed in accordance with and embodying my present invention;

Figure 2 is a side elevational view, partly broken away and in section, of the illuminator;

Figure 3 is an enlarged transverse sectional view of the illuminator taken approximately along the line 3—3, Figure 2;

Figure 4 is an enlarged longitudinal sectional view of the indirect room-illuminating member of the lamp structure taken approximately on the line 4—4, Figure 1;

Figure 5 is a vertical sectional view of the illuminating member taken approximately along the line 5—5, Figure 1;

Figure 6 is a horizontal sectional view of the illuminating member taken approximately along the line 6—6, Figure 5; and

Figure 7 is a fragmentary vertical sectional view of the head tilting mechanism taken approximately along the line 7—7, Figure 5.

Referring now in more detail and by reference characters to the drawings, which illustrate a preferred embodiment of my invention, the lamp

structure or illuminator, generally designated A, includes a supporting post 1 suitably provided at its lower end with a split sleeve section 2 having a pair of opposed radial ears 3 for accommodating a clamping screw 4. The sleeve 2 is adapted to fit upon a suitable preferably tubular bracket B bolted or otherwise suitably secured to a wall or the like, as best seen in Figure 1; however, it will be understood that the sleeve 2 may, with equal facility, be fitted directly upon any suitable supporting member, such, for instance, as any available dental unit or other type of surgical or dental equipment.

Journalled upon the upper end of, and extending radially outwardly from, the post 1, is a tubular swingable arm 5 provided at its outer end with an upwardly presented socket 6 for receiving the lower end of a pivot sleeve 7 rotatably disposed at its upper end in the downwardly presented socket-end 8 of a second horizontally disposed swingable tubular arm 9, in turn, provided at its outer end with an upwardly presented extension 10 having an upwardly presented socket 11, all as best seen in Figure 2 and for purposes presently appearing.

Mounted in the upper end of the post 1 and projecting upwardly beyond the arm 5, is a two-pronged connector-element 12 adapted for engagement in a co-operable connector-element 12' fixed in the post 1. At its upper end, the element 12 is provided with a diametrically enlarged barrel 13 resting endwise upon the upper margin of the post 1 and, in turn, provided with a decorative outer casing 14 apertured, as at 15, for accommodating an operating key 16 and diametrically sized for snugly embracing the downwardly projecting neck 17 of a bowl-shaped indirect lighting fixture 18.

In its upper end, the barrel 13 is finally provided with a conventional screw-receptacle 19 for receiving a conventional electric light bulb b, all as best seen in Figure 4.

Embracingly mounted on, and positioned preferably centrally of, the arm 9, is a U-shaped bracket 20 having its bight 20' disposed beneath the arm 9 and provided with a downwardly projecting axially bored stud 21 having a ball-shaped end portion 22 for pivotal engagement in a universal joint housing 23, in turn, at its other end adapted for receiving the ball-end portion 24 of an axially bored stud 25 supportingly mounted in the upper face of an elongated downwardly opening reflector housing 26 provided with a transformer 27, a manually operable switch 28, opposed sockets 29, and a

fluorescent tube 30, all as best seen in Figures 1 and 3 and for purposes presently fully appearing.

Swingably mounted in the upwardly presented socket 11 of the arm-extension 10, is a diametrically reduced journal end 31 of an L-shaped housing or shell 32, which preferably integrally includes vertically disposed side walls 33, a bottom wall 34, and a rear wall 35. The housing or shell 32 is open at its forwardly presented end and is provided with opposed parallel arcuately shaped side wall continuations 36. Formed preferably integrally with the bottom and rear walls 34, 35, respectively, are forwardly projecting aligned bosses 37, 38, provided with registering apertures 39, 40, for rotatively receiving a horizontally disposed shaft 41 provided at its outwardly projecting end with a manipulating handle 42 and at its inner projecting end with a worm gear 43 for meshing engagement with a pinion 44 keyed centrally upon a short shaft 45 rotatably mounted in, and projecting horizontally through, the side-wall continuations 36.

Keyed upon the outer projecting end of the shaft 45 for facewise abutting engagement upon the outer faces of the side wall continuations 36 and secured in place by means of lock nuts 46, are bracket members 47 provided with oppositely presented bent-over flanges 48 for riveted securement to a bowl-shaped illuminator shell or housing 49 preferably formed of molded plastic or other suitable material and including parabolic side segments 50, flattened top and bottom segments 51, a forwardly projecting flange or bell 52, and a transverse rear wall 53 provided with a rearwardly projecting peripheral flange 54 and a central aperture 55 having diametrically opposed elongated slots 56. Formed preferably integrally upon the inner face of the shell 49 and extending inwardly from the forward margin across the upper and lower flattened sections of the flange 52, are pairs of symmetrically positioned bosses 57 each having a set-back front face 58 and a longitudinally extending channel 59, the shell-flange 52 being finally provided, between the paired bosses 57, with step-like ventilating louvres 60, all as best seen in Figures 5 and 6 and for purposes presently fully appearing.

Secured, as by means of screws or other suitable fastening means, upon the forwardly presented face of the rear shell wall 53 concentrically with the aperture 55, is a centrally apertured base plate 61 provided with a pair of forwardly projecting legs 61' axially bored and tapped for receiving mounting screws 62 extending securingly through a conventional electric socket 63 having a forwardly presented receptacle 64 for receiving a suitable electric light bulb b'.

Rotatably mounted in and extending through the central aperture of the plate 61 and secured by means of a tensioning spring 65 and lock nut 66, is a rearwardly extending lead screw 67 preferably integrally provided at its outer end with a concentric cup-like manipulating shell 68 having a forwardly extending side wall 69 disposed at its forward peripheral margin in rotatable endwise abutment against the rearwardly presented face of the rear wall flange 54, the line of abutment being decoratively concealed by an annular metallic trim-band 70 secured by screws 71 or other suitable means upon

the outer face of the rear wall flange 54, all as best seen in Figures 5 and 6.

Marginally secured to the shell 49, is a preferably parabolic reflector 72 spun or otherwise suitably formed from aluminum, brass, or the like and provided upon its forwardly presented reflecting face with any selected surface coating commonly used in reflectors. Adjacent its forward peripheral margin, the reflector 72 is cut away along a somewhat hyperbolic curve, as at c, in the provision of two diametrically opposed U-shaped recesses 73 disposed symmetrically with respect to the vertical axial plane of the reflector 72 and substantially embracing the pairs of bosses 57.

The reflector 72 is also provided with a centrally disposed rearwardly opening aperture 74 and a preferably integral rearwardly projecting annular flange or collar 75 of substantially greater diametral size than the largest diametral size of the lamp b', for shiftably supporting an open-ended tubular light control sleeve 76 having two diametrically opposed U-shaped recesses 77 extending axially inwardly from its forward peripheral margin and disposed approximately at an angle of 90° with respect to the reflector recesses 73.

At its rear end and outwardly of the reflector collar 75, the sleeve 76 is riveted or otherwise securely fastened at diametrically opposed points to forwardly projecting horizontally disposed members 78 extending shiftably through the rear wall slots 56 and transversely connected by a bight member 79 in the formation of a supporting clevis 80. Rotatably mounted in the clevis-bight 79, is a centrally disposed nut 81 for threaded engagement with the lead screw 67, all as best seen in Figures 5 and 6 and for purposes presently more fully appearing.

Secured upon forward faces of, and extending longitudinally between, the opposed bosses 57, are inwardly opening channel members 82 each preferably provided with an integral masking segment 83. Supported along their forward margins in the channels 82 and edgewise engaged in the boss-channels 59, are paired arcuate segments 84, 84', respectively formed of light correction and heat absorbing glass extending axially into, and marginally contoured for fitting snugly against the forward face of, the reflector 72.

Similarly secured upon the shell rim between one of the sets of paired bosses 57, is a conventional hinge member 85 welded or otherwise marginally fixed upon a central metallic panel 86 covering the area between, and marginally overlapping, the channel members 82 for permitting access to the bulb b'. Removably secured by means of screws to the arcuate side portions of the flange periphery between the ends of the channel members 82, are C-shaped frame-members 87 provided with inwardly presented marginal flanges 87' for retentive engagement with translucent lens segments 88 abutting against the boss faces 58, having their outer faces disposed in the peripheral plane of the shell flange 52 and flush with the outer faces of the channel members 82, and being formed preferably of frosted, etched, or patterned glass, all as best seen in Figures 5 and 6.

The socket 63, fluorescent lamp transformer 27, and the indirect lighting fixture socket 13 are all connected in parallel by means of a flexible electrical conduit 89 to a suitable source of electric current (not shown). Thus, when

the electric conduit is connected and the lamp structure or illuminator properly installed, the hand switch 16 may be turned to energize the light bulb b for casting an indirect light throughout the entire room. The fluorescent light 30 may be energized by manipulation of the switch 28 and may be swung around in any direction to bring a daylight simulating illumination upon any desired object. Thus, for instance, if the dentist is matching colors in teeth or porcelain filling materials, he may tilt the fluorescent lamp 30 in any direction so as to obtain a type of illumination in which color matching and similar operations may be very accurately and precisely performed. The operating light proper will, by reason of the shape of the reflector, together with the light masking sleeve 76 and its apertures 77, and also the opaque panel 86, produce a highly uniform and concentrated beam confined to an oblong rectangular area uniquely adapted for illuminating cavities of the human body, such as the mouth and the like. The intensity of the light may be very minutely controlled and varied by rotating the shell 68, causing the light controlling tube 76 to move inwardly or outwardly, as the case may be, and as the tube 76 moves forwardly, the intensity of the light is cut down and, conversely, as the tube 76 moves rearwardly, the intensity of the light is increased.

The illuminator may be conveniently installed and substantially meets all illuminating requirements of the selected location. The light fulfills in every respect the objects stated and it should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the illuminator may be made and substituted for those herein shown and described without departing from the nature and principle of my invention.

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

1. A lamp-structure including, in combination, a bowl-shaped shell, a light-source fixed centrally within the shell, a central opaque panel extending forwardly of the light-source diametrically across the mouth of, and having connection at its ends with, the shell, lens-means disposed in the mouth of the shell for projecting light-rays therefrom upon opposite sides of said panel, a centrally apertured parabolic reflector disposed about said light-source in, and fixed to, the shell, an opaque tubular light-control sleeve mounted for shiftable movement in the aperture of the reflector and about the light-source, segmental glass-sections disposed within the shell intermediate the light-source and reflector, and means for shifting said light-control sleeve relatively to the light-source.

2. A lamp-structure including, in combination, a bowl-shaped shell having a transversely disposed centrally apertured rear wall, an electric socket having a base fixed upon said wall and projecting forwardly into the shell, a light-source seated in the socket, a central opaque panel extending forwardly of the light-source diametrically across the mouth of, and having connection at its ends with, the shell, lens-means disposed in the mouth of the shell for projecting

therefrom light-rays upon opposite sides of the panel, a centrally apertured parabolic reflector disposed about said light-source in, and at its outer peripheral margin fixed to, the shell, the reflector having a centrally disposed peripherally flanged opening, an opaque tubular light-control sleeve mounted for movement longitudinally through said opening in the reflector and about the light-source, and means for shifting said sleeve relatively to the light-source, said means comprising a lead-screw mounted for rotation in the base of said socket and projecting through the aperture of the shell rear wall, a nut having threaded engagement with said lead-screw, and an extension on the sleeve projecting through the shell rear wall aperture and having fixed connection with said nut.

3. A lamp-structure including, in combination, a bowl-shaped shell having a transversely disposed centrally apertured rear wall, an electric socket having a base fixed upon said wall and projecting forwardly into the shell, a light-source seated in the socket, a central opaque panel extending forwardly of the light-source diametrically across the mouth of, and having connection at its ends with, the shell, lens-means disposed in the mouth of the shell for projecting therefrom light-rays upon opposite sides of the panel, a centrally apertured parabolic reflector disposed about said light-source in, and at its outer peripheral margin fixed to, the shell, the reflector having a centrally disposed opening, an opaque tubular light-control sleeve mounted for movement longitudinally through said opening in the reflector and about the light-source, segmental glass-sections disposed within the shell intermediate the light-source and reflector, and means for shifting said sleeve relatively to the light-source, said means comprising a lead-screw mounted for rotation in the socket base and projecting through the aperture of the shell rear wall, a nut having threaded engagement with said lead-screw, an extension on the sleeve projecting through the shell rear wall aperture and having fixed connection with said nut, and a manipulating member fixed to the screw and marginally rotatable upon the shell, said sleeve having diametrically opposite marginal recesses opening upon its forward end.

4. A lamp structure including an open-mouthed bowl-shaped outer housing provided with a central opaque panel extending across its mouth from top to bottom, segmentally shaped transparent lens members mounted on opposite sides of the panel, said opaque panel and said lens members together forming a closure for the housing, a reflector within the housing, a light source within the reflector, an axially shiftable open-ended tube disposed around the light source and having diametrically disposed lateral recesses extending inwardly from the margin of the open end of the tube and extending above and below the longitudinal axis of the reflector, and means for moving said tube toward and away from the opaque panel to control the amount of light directed toward the reflector.

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