

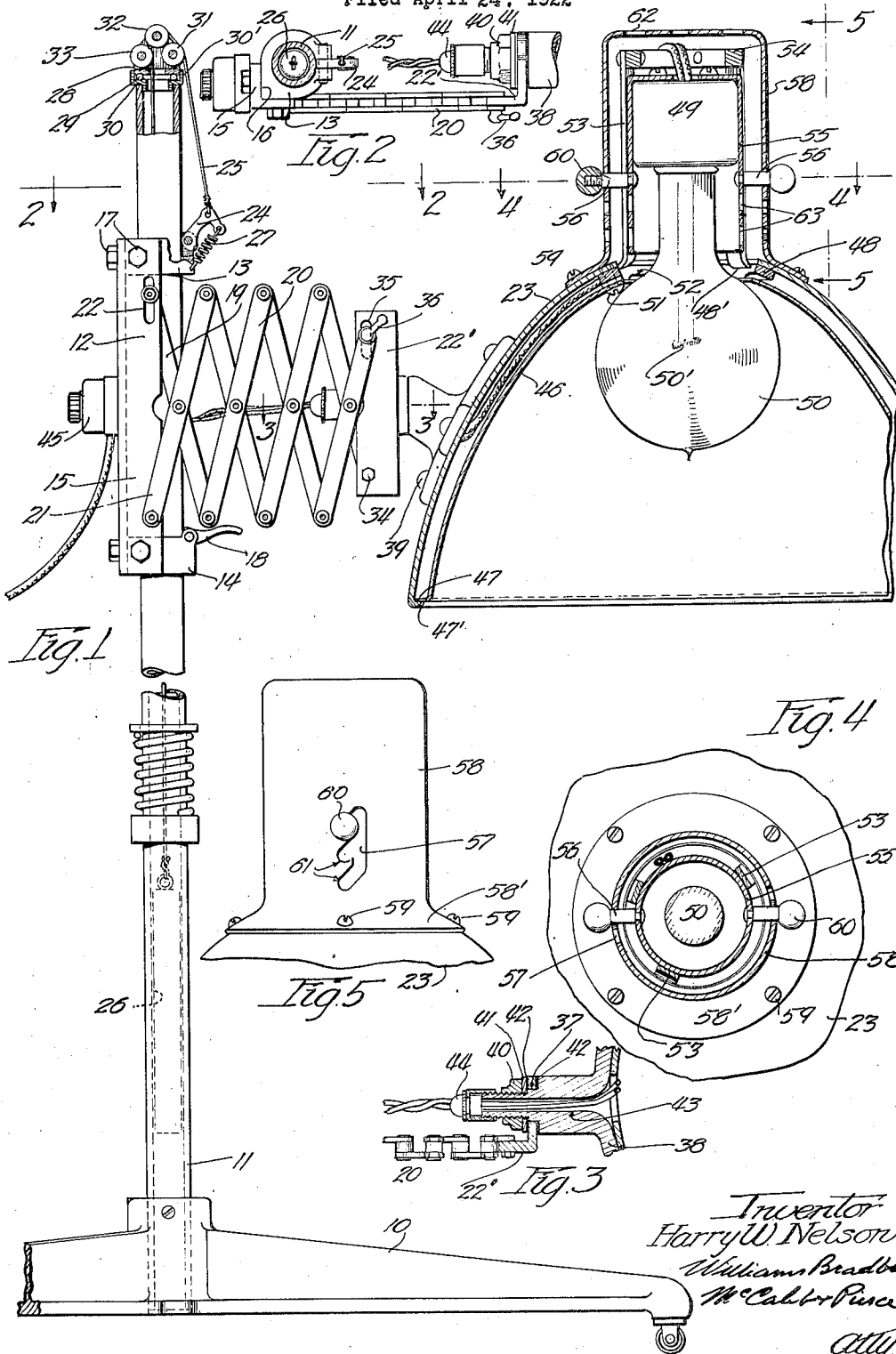
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THERAPEUTIC LAMP

Filed April 24, 1922



UNITED STATES PATENT OFFICE.

HARRY W. NELSON, OF CHICAGO, ILLINOIS.

THERAPEUTIC LAMP.

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To all whom it may concern:

Be it known that I, HARRY W. NELSON, a citizen of the United States, and resident of Chicago, in the county of Cook and State of Illinois, have invented a certain new and useful Improvement in Therapeutic Lamps, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to therapeutic lamps, and has for its object:

First: The provision of a vertical standard and a counter balanced lamp supporting bracket reciprocable thereupon, the counter balance being so secured to the bracket that in the event the supporting cable should break or the counter balance otherwise fail to function, the bracket will be automatically locked to prevent a sudden fall by the action of gravity;

Second: The provision of a therapeutic lamp comprising a hollow standard in which is reciprocable a counter-weight, and also comprising a lamp supporting bracket reciprocally supported on the standard, the bracket and the counterweight being connected by a flexible cord passing over pulleys mounted on a swivel at the upper end of the hollow standard, the pulleys being so positioned that the downward force of the counter-weight and the bracket is substantially coincident with the axis of the swivel, so that the latter may swing freely as the bracket is swung about the standard;

Third: The provision of a therapeutic lamp comprising a vertical standard which supports a rotatable and reciprocable lamp bearing bracket of the lazy tongs type, the supporting of the bracket upon the standard being of a novel construction whereby great strength and rigidity may be obtained with an economical construction;

Fourth: The provision of a therapeutic lamp in which the bulb of the lamp may be quickly adjusted relatively to its reflector to give either a focused or a diffused light; and

Fifth: The provision in a therapeutic lamp of an outer shade and an inner reflector, the reflector being secured by a novel mounting

within the shade whereby the outer shade will remain comparatively cool.

As my invention will best be understood by reference to a particular embodiment thereof, I shall proceed directly with the description of the accompanying drawings, in which—

Figure 1 is a view partly in side elevation and partly in longitudinal vertical section of a therapeutic lamp embodying my invention;

Figure 2 is a plan section taken on the line 2—2 of Figure 1;

Figure 3 is a detail plan section taken on the line 3—3 of Figure 1;

Figure 4 is a plan section of the adjustable bulb mounting taken on the line 4—4 of Figure 1; and

Figure 5 is a fragmentary elevation of the cap which encloses the bulb mounting taken on the line 5—5 of Figure 1.

Similar characters of reference refer to similar parts throughout the several views.

The lamp here shown comprises a vertical standard having a three-legged pedestal 10, preferably mounted upon casters and supporting in its center hub a hollow vertical post or tube 11. Rotatable about and vertically reciprocable upon the tube is mounted a bracket support 12 which comprises a pair of spaced sleeves 13 and 14 and an angle bar 15. As shown in Figure 2, the sleeves 13 and 14 are provided with right angle corners 16 which fit into the corners of the angle bar 15 and to which the bar is secured, as by cap screws 17. It will be noted that the lower sleeve 14 of the support 12 is provided with a locking cam 18 by which the support may be locked at any desirable height to prevent both vertical rotation and reciprocation.

It will be noted that the sides of the angle bar 15 are spaced by the sleeves 13 and 14 a distance from the periphery of the tube 11. In this space is pivoted the end of a bar 19 of a lazy tongs extension bracket. The end of the mating bar 21 is pivoted at the lower end of the angle bar 15 and at the outside of the latter. The hole in the angle bar 15 through which is pivoted

the end of the bar 19 is vertically slotted, as shown at 22, to allow the lazy tongs to move outwardly and inwardly.

The opposite end of the lazy tongs supports an angle plate 22 upon which is horizontally pivoted a bulb supporting shade 23, hereinafter described. At the upper edge of the sleeve 13 is pivoted a cam arm 24, to the outer end of which is secured a flexible cable 25, which leads upwardly over pulleys at the top of the tube 11 and thence downwardly within the tube to a counter-weight 26 reciprocable within the tube. The cam surface of the cam arm 24 is arranged to lock against the periphery of the tube 11 when the cam is moved clockwise (Figure 1) as it is urged to do by the tension spring 27, the ends of which are secured to the bottom of the sleeve 13 and the end of the cam arm 24, respectively. The pull of the cable 25 under the force of the counter-weight 26 normally raises the cam arm 24, whereby the cam surfaces are swung out of engagement with the tube 11. Should the cable 25 break or have become unfastened or stuck in its pulleys, or should the counter-weight 26 not have reciprocated freely so that the lamp bracket is no longer counter balanced, a sudden fall of the latter is prevented by the locking of the cam under the action of the tension spring 27, whereby any danger of an accidental fall of the shade upon the body of a patient is eliminated.

The pulleys over which the cable 25 passes are three in number and are all pivoted upon a swivel member 28 which forms the upper ring of a ball thrust bearing 29, the lower ring 30 of which fits over the inside periphery of the tube and is provided with an outer upwardly extending flange 30', which serves to retain the swivel against horizontal displacement. The first of the pulleys, 31, serves to hold the cable 25 outwardly to clear the periphery of the flange 30' and of the tube 11. The second pulley 32 is pivoted substantially over the axis of the swivel 28 so that the downward force of the counter-weight and the bracket upon the cable 25 is concentrated at the center of the swivel, whereby the latter is free to turn as the bracket is rotated about the tube 11. The third pulley 33 serves to hold the cable inwardly so that it clears the inner edge of the swivel bearing and so that the counter-weight will have no tendency to bind in its reciprocation.

Similarly to the angle bar 12, the angle plate 22 at the opposite ends of the lazy tongs is provided with a stationary pivot 34 for one of the bars and with a vertically slotted pivot 35 for the mating bar. The pivot 35 is provided with a wing nut 36 whereby the lazy tongs bar may be clamped

to the angle plate 22' to prevent vertical movement in the slot 35 whereby accidental inward or outward movement of the shade is prevented.

The offset portion of the angle plate 22' is provided with a hole 37 through which passes the reduced shoulder of a bracket 38 which is secured to the shade 23, as by rivets or screws 39. By means of a castle nut 40 and a washer 41 the offset portion of the angle bracket 22' is clamped between two fibre washers 42 to form a horizontal pivot for the bracket 38, whereby the shade 23 may be swung about the horizontal axis. It will be noticed that the bracket 38 is provided with a longitudinal bore 43 through which lead wires pass from the bulb socket to a socket 44 at the reduced end of the bracket 38. From the socket 44 flexible electric conduits lead through a control switch 45 preferably mounted on the angle bar 15 and thence to any suitable source of current. The purpose of the socket 44, it may be stated, is to allow the shade 23, and its associated bracket 38, to be quickly demountable from the angle plate 22', whereby the lamp may be partially disassembled for transportation.

Within the shade 23 is a reflector 46, preferably of parabolic cross section, which also acts as a spaced lining for the shade. The reflector 46 is secured to and spaced from the shade 23 by an outwardly turned flange 47 at the bottom of the reflector and the spacing ring 48 at the top of the reflector. Within the spacing ring 48 the reflector 46 and the shade 23 are provided at their tops with apertures large enough to allow the insertion of the socket 49 of the bulb 50. A plurality of screws 51 pass through the inner margin of the shade 46 through holes in the spacing ring 48 and are threaded into the margins of the shade 23. It will be noted that, except at the contact points adjacent to screws 51, the spacing ring 48 is of reduced thickness, as indicated at 52, whereby the heat conductivity between the reflector 46 and the shade 23 is greatly lessened. A plurality of upwardly extending strips 53 are disposed around the socket 49, being supported at their offset lower ends in notches 48' in the spacing ring 48 and secured by the screws 51. The upper ends of the strips 53 are riveted to an angular ring 54.

Fitted over and secured to the socket 49 is an inverted cup 55, the downwardly extending cylindrical portion of which bears a pair of diametrically opposed pins 56, which pass between the strips 53 and extend outwardly through apertures 57 in a cap 58 which is fitted around the strips 53, and is supported at the top of the shade 23 by screws 59 in the bottom flange 58' of the cap. The ends of the pins 56 are preferably provided with

small spheres or balls 60, by which the pins may be manually grasped. As shown in Figure 5, the apertures 57 in the cap 58 are provided with a plurality of notches 61 into which the pins 56 may be dropped.

It will be observed that the filament 50' of the electric light bulb 50 is shown as being substantially at the focus of the parabolic reflector 46, which will cause the light to be reflected downwardly in parallel rays covering a relatively large area. When it is desired to focus the light over a smaller area to obtain a more concentrated therapeutic effect, the balls 60 at the ends of the pins 56 are rotated counter-clockwise (Figure 4), withdrawing the pins from the upper set of notches 61, when the pins are lowered to one of the lower pairs of notches. This lowering of the filament 50' below the focus of the reflector results obviously in a crossing of the rays around a second focal point which will produce a concentrated heat upon the body of a patient. By still further dropping of the bulb, a diffusion of rays may be effected over even a larger area than when the filament is at the focus of the reflector.

It is obvious that the notches in the cap 58 may be so spaced that an effective range of diffusion of the light rays may be obtained through a comparatively simple and inexpensive construction.

An effective cooling of the external parts of the lamp, such as the shade 23 and the cap 58, is effected by the spacing of the reflector 46 from the shade and by the provision of a series of holes 47' in the flange 47 of the reflector through which a draft produced by the heat of the bulb may pass upwardly between the reflector and the shade past the reduced portion 52 of the spacing ring 48 and outwardly through the apertures 57 and holes 62 at the top of the cap 58. The inverted cup 55 surrounding the socket 49 is also provided with a series of holes 63 through which heated air may pass into the cap 58 and through the holes 62 in the top thereof.

It is to be understood that, while I have thus described but one particular embodiment of my invention, departures from the specific construction shown may be made without departing from the spirit of my invention and I wish to limit myself only by the scope of the following claims, in which I claim:

1. A support for a therapeutic lamp, comprising a tubular standard, a supporting bracket held by and vertically reciprocable on said standard, a cam lever pivoted on said bracket adjacent said tube and having a cam surface for contacting the surface of said tube to prevent downward movement of said bracket, means urging said cam into engagement with said tube, a flexible cord secured at one end to said cam arm, passing

over a support on said standard and secured at its opposite end to a counterweight, said cord holding said cam out of engagement with said tube.

2. A supporting structure for a therapeutic lamp, comprising a hollow vertical tube, a supporting bracket longitudinally reciprocable thereon, a counterweight reciprocable within said tube, a flexible cord secured at its ends to said bracket adjacent said tube and to said counterweight respectively, a pulley horizontally pivoted upon a bearing frame vertically pivoted at the upper end of, and about the axis of, said tube, the center of said pulley lying substantially in the axis of said tube, a second pulley horizontally pivoted on said frame and overhanging the periphery of said tube, said cord passing over both of said pulleys.

3. A support for a vertically reciprocable bracket, comprising in combination therewith a hollow vertical post constituting a standard, said bracket being reciprocably supported on said post, a counterweight movable vertically within said post, a flexible cord secured at its respective ends to said counterweight and said bracket and passing over each of the hereinafter mentioned pulleys, and a swivel rotatable about a vertical axis at the top of said standard, said swivel comprising two pulleys, one of which is pivoted adjacent the axis of said swivel and the other of which is pivoted a sufficient distance from the center of the swivel to hold the cord beyond the periphery of said post.

4. A device for providing a vertically, horizontally and angularly adjustable support for a supported object, said device comprising a vertical cylindrical standard, a pedestal at the bottom of said standard, a pair of spaced sleeves surrounding and vertically reciprocable upon said standard, each of said sleeves having a substantially square corner, a vertically disposed angle bar secured at its respective ends to each of said sleeves at the corners thereof, a lazy tongs bracket supported on said angle bar and supporting at its free end a second angle bar upon one flange of which is rotatably secured said supported object, and a counterbalance for said bracket.

5. The combination with a support for a therapeutic lamp, of a bracket slidable on said support, a counterweight within the support, an automatic latch comprising a smooth-faced cam arranged to engage said support, a tension spring connecting said bracket to said cam by means of an arm on the latter, and a flexible member having one end connected with a counterweight and the other end to said cam by means of an arm on the latter.

6. The combination of a support, a bracket slidable on said support, a counterweight for

said bracket, an automatic latch comprising
a cam arranged to engage said support,
spring means tending to hold said cam
against said support, and a flexible member
5 having one end connected to said counter-
weight and the other end to said cam to hold
the latter away from said support.

In witness whereof I hereunto subscribe
my name.

HARRY W. NELSON.

Witnesses:

DAGMAR PETERSON,
DAVID DICKINSON.