July 18, 1933. J. H. WAGENHORST 1,918,725

ARC LIGHTING APPARATUS

Filed Jan. 14, 1929 3 Sheets-Sheet 1

Fig. 1

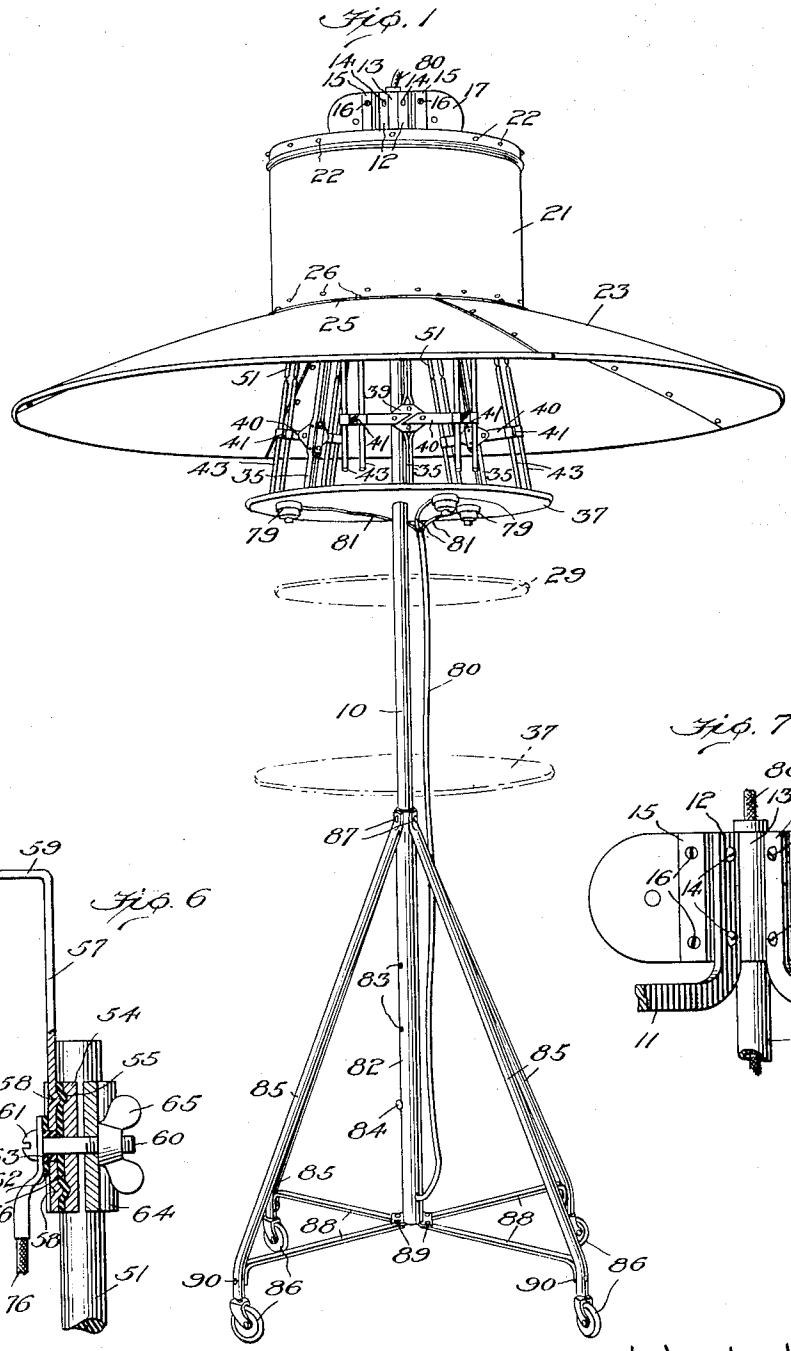


Fig. 6

Fig. 7

Inventor

James H. Wagenhorst

By Church & Church

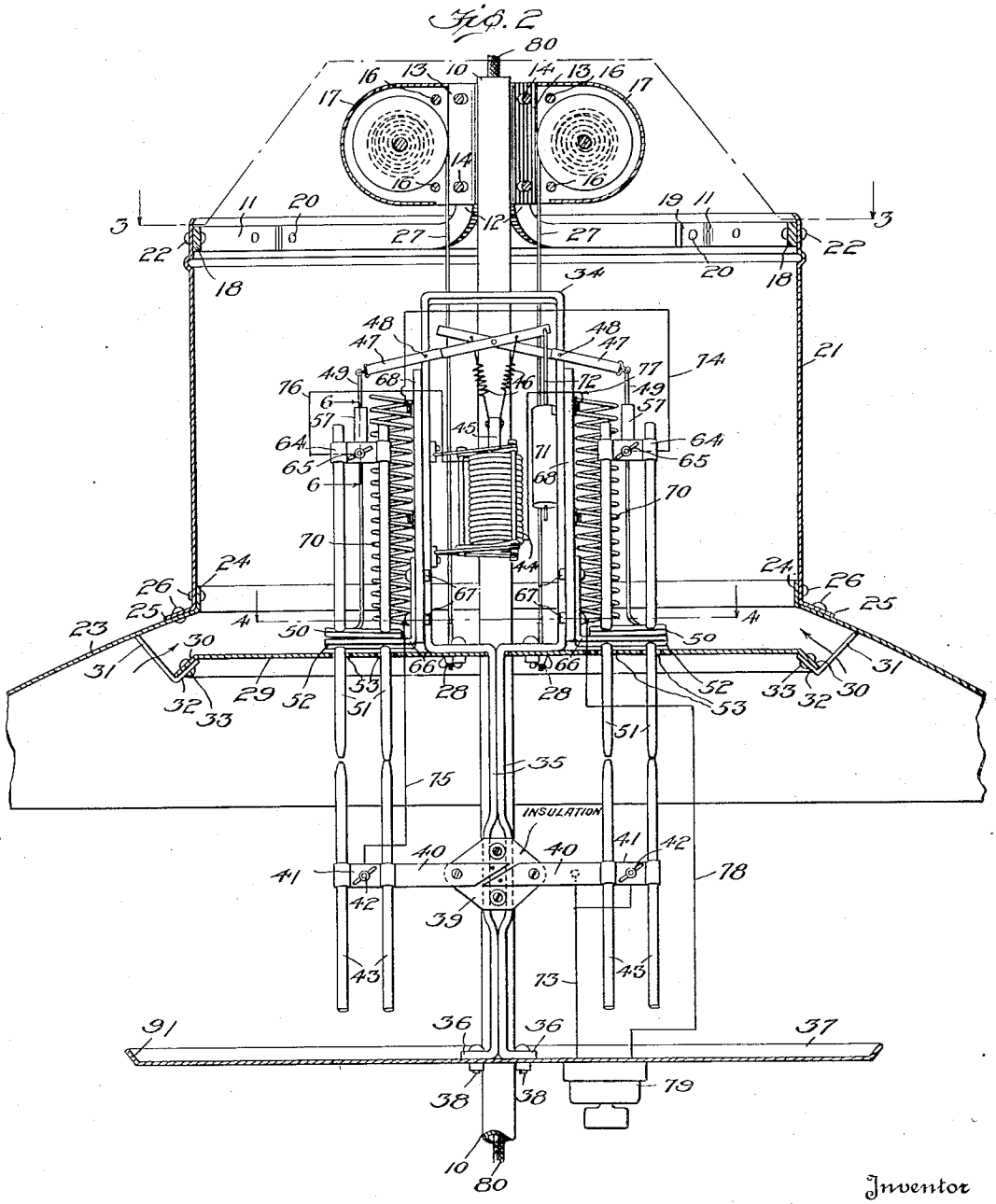
Attorneys

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ARC LIGHTING APPARATUS

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Fig. 2



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ARC LIGHTING APPARATUS

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Fig. 3

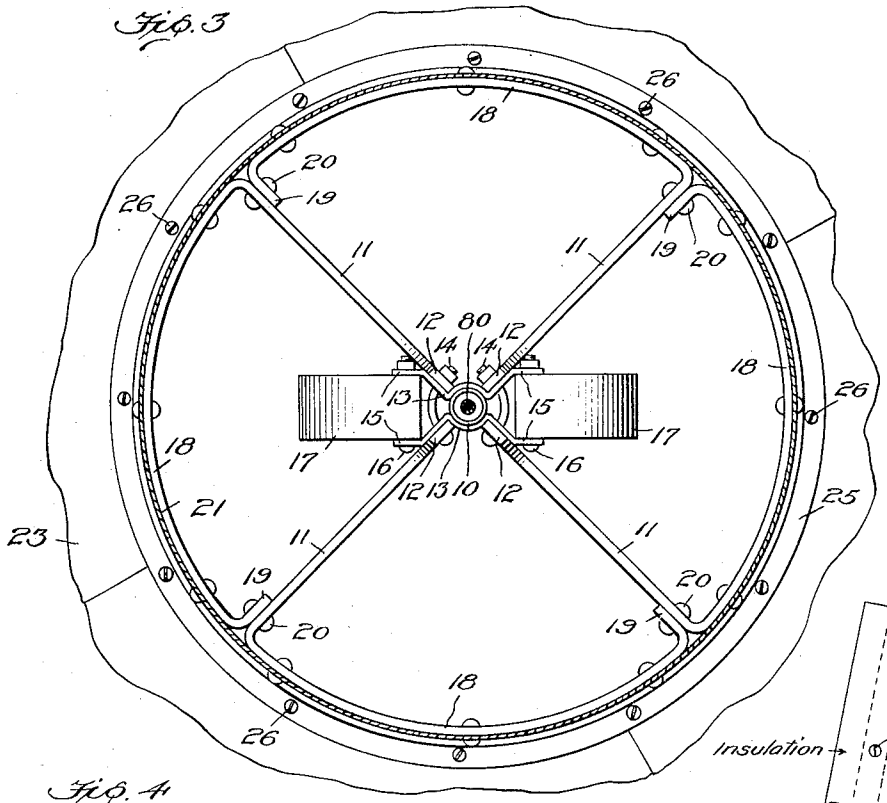
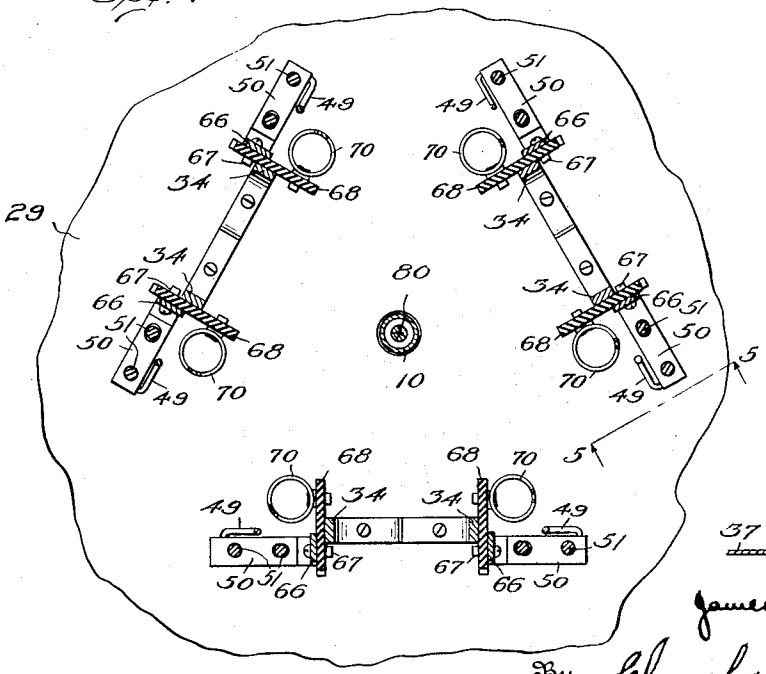
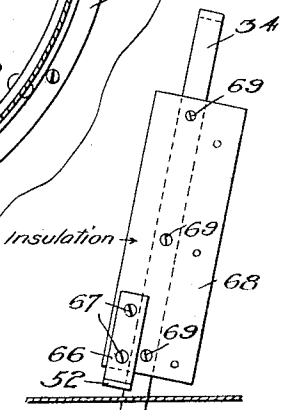


Fig. 4





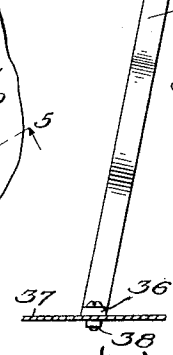


Fig. 5

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Patented July 18, 1933 1,918,725

UNITED STATES PATENT OFFICE

JAMES H. WAGENHORST, OF DETROIT, MICHIGAN

ARC LIGHTING APPARATUS

Application filed January 14, 1929. Serial No. 332,470.

My invention relates to improvements in arc lighting apparatus, and has to do, more particularly, with an arc lighting unit designed for flooding a treatment room or other large area with light.

The chief object of my invention is to provide an arc lighting apparatus suitable for use in flooding a treatment room with light so that the apparatus may be used in situations such as tubercular hospitals, sanitariums, bath houses, athletic training houses, public schools, or wherever arc light treatment may be beneficially used.

A further object of my invention is to provide such an apparatus, in which the arcs are normally located above the heads of persons in the room, but can conveniently be brought down within reaching distance for the purpose of changing the carbons or any repairs that may be necessary.

A further object of my invention is to provide such an apparatus in which any fumes coming from the arcs may escape upwardly through the reflector and be carried away from the room.

A further object of my invention is to provide a simple and inexpensive, but highly efficient, apparatus of this nature, which is suitable for use in treating a large number of patients at one time in a single room, so that, for instance, the apparatus may be used for flooding a play room with light, so that the children treated may play while being subjected to the light treatment.

Further objects, and objects relating to details and economies of construction and operation, will definitely appear from the detailed description to follow. In one instance, I accomplish the objects of my invention by the devices and means set forth in the following specification. My invention is clearly defined and pointed out in the appended claims. A structure constituting a preferred embodiment of my invention is illustrated in the accompanying drawings, forming a part of this specification, in which:—

Figure 1 is a view in front elevation of an apparatus embodying my invention;

Fig. 2 is an enlarged, vertical, sectional view through the upper portion of the apparatus, the lamp-operating mechanism being shown in side elevation;

Fig. 3 is a horizontal sectional view, taken on the line 3—3 of Fig. 2;

Fig. 4 is a fragmentary, horizontal view, taken on the line 4—4 of Fig. 2;

Fig. 5 is a detail, sectional view, taken substantially on the line 5—5 of Fig. 4;

Fig. 6 is a detail, sectional view through a holder for the movable electrodes, taken on the line 6—6 of Fig. 2; and

Fig. 7 is a detail view, in side elevation, of the connection between the spider, the upper end of the supporting column and the spring-lift devices.

In the drawings, the same reference numerals refer to the same parts throughout the several views and the sectional views are taken looking in the direction of the arrows at the ends of the section lines.

In general, my invention consists in providing a central supporting column to which the reflector is fastened. This reflector has a central opening therein. The lamp mechanism, which may consist of several lamp units, is mounted on a lamp base, which is slidable on the central supporting column, and, as it is raised or lowered on the column, the lamp-operating mechanism may move through the central opening in the reflector. I propose to provide a counterpoise carried by the column, which counterbalances the weight of the lamp base and parts supported thereby, so that it will remain in the position to which adjusted and be raised and lowered easily. I propose to provide a spider fastened to the upper end of the central supporting column supporting a reflector dome, which serves to house the lamp-operating mechanism, and the upper edge of the reflector is fastened to the lower edge of this dome. The counterpoise used may consist of a spring lift device of the type used for counterbalancing window sashes, and comprising a coil spring and a flexible strap, the lower ends of the flexible straps of such devices being connected to the lamp base. The lamp-operating mechanisms comprise the lamp frames which are mounted on the

base and have tails projecting through the base downwardly therefrom, and an ash tray may be secured to the lower ends of these tails and thus supported at a suitable distance from the lamp base. I also propose to space the lamp base, when in operative position, from the reflector, so as to provide vent openings between the outer edge of the lamp base and the reflector, through which any fumes coming from the arcs may escape upwardly and out through the top of the reflector dome, so that such fumes may be carried out of the room in this way, and not be directed downwardly upon the patient.

Referring to the accompanying drawings, in which I have illustrated a preferred embodiment of my apparatus, the apparatus is supported by a central supporting column 10, which may well be tubular as shown, so as to form a central conduit through which the circuit wires may be brought to the apparatus. Secured to the upper end of this column there is a spider formed of the radiating arms 11, the inner ends of which are bent upwardly, at 12, and secured by the curved bolts 14 to the clamping members 13, which surround the upper end of the column 10, by which means the spider formed from said radiating arms is attached rigidly to the upper end of the column. These clamping members 13 have extensions 15, lying on opposite sides of the casings 17 of spring lift devices, and these extensions 15 are secured to said casings by the bolts 16. Each of the radiating arms 11 of the spider has its outer end formed into a sector 18, having an inwardly directed finger 19 lying against the next adjacent arm 11, as shown in Fig. 3, and secured thereto by rivets 20. These arms 11, with the sector portions 18, therefore, constitute in effect a spider, having its center secured to the supporting column, and having at its periphery a ring to which the upper edge of the reflector dome is secured. The reflector dome comprises a sheet metal cylinder 21, fitting around the ring formed by the sector portions 18, and secured thereto by rivets 22. The reflector 23 is made of sheet metal and may be conical or parabolic, as desired, and this reflector 23 has a central opening therein bordered by the upstanding flange 24, which fits inside the lower edge of the cylindrical reflector dome 21, the latter having an outwardly flaring flange 25, which fits upon the upper portion of the reflector 23. The lower portion of the reflector dome 21 and the upper portion of the reflector 23 are secured together by rivets 26 passing through the parts 24 and 25, as shown in Fig. 2.

The spring lift devices in the casings 17 are of a type well known in the trade and used particularly as window sash balances. These comprise a flexible strap 27 wound about a central shaft to which a coil spring is connected, so that, as the strap 27 is pulled out and unrolled, the spring is tensioned and tends constantly to rewind the strap. The lower ends of the straps 27 of these spring lift devices are, in the present instance, fastened at 28 to a lamp base 29, having a central opening therein through which the supporting column extends. This lamp base is slidable upon the supporting column and the spring lift devices having the flexible straps 27 tend to support the lamp base in the position to which it has been previously adjusted, the spring lift devices serving as counterpoise means for balancing the weight of the lamp base and the parts supported thereby. The lamp base 29 is provided with a downwardly-flaring flange 30, at its outer edge, and spacing fingers 31 are fastened to the outer edge of the lamp base by means of angle portions 32 on said fingers, engaging behind the flange 30, and secured thereto by the rivets 33. When the lamp base is in its operative position, as shown in Fig. 2, the ends of the fingers 31 contact with the reflector 23, and space the edge of the lamp base from the reflector, so as to provide vent openings between the edge of the lamp base and the reflector, through which any fumes coming from the arcs may pass upwardly and thus escape from the reflector and out through the top of the reflector dome, which is open as shown.

Upon the lamp base I mount a plurality of arc lamp units. In this case, three such units are shown mounted upon the base, arranged equidistantly thereon around the central supporting column 10, as shown in Fig. 4. Each of these units comprises a lamp frame 34, substantially rectangular in shape, the bottom member of which is fastened to the lamp base, and provided with tail members 35 depending therefrom through an opening in the lamp base. The lower ends of the tail members 35 are bent laterally to form the ears 36 to which an ash tray 37 is secured by bolts 38. This ash tray 37 is preferably provided with a rim flange 91 to prevent sparks falling therefrom to the floor. A block 39, of insulating material, is secured to each pair of tail members 35, and to it are secured the clamping bars 40, arranged as shown in Fig. 2, so as to be insulated from each other. The stationary electrodes 43 are clamped to these clamping bars by the outer clamping members 41, and the clamping screws 42, in the manner well understood in this art. In this way, the stationary electrodes are supported by the tail members 35 between the lamp base 29 and the ash tray 37.

An operating solenoid 44 is resiliently supported from one of the side members of each lamp frame 34. The core 45, working

in this solenoid, is connected by coil springs 46 to the crossing ends of electrode-operating levers 47, which are pivoted to the side members of the frame 34, at 48. A clutch-operating rod 49 is pivotally connected to the outer end of each lever 47, the lower end of said rod being connected to a clutch 50, having two openings through which the movable electrodes 51 extend. One of the openings is preferably enlarged, while the other is of such size as to bind upon the corresponding electrode 51, when the clutch 50 is tilted. Slabs 68, of asbestos board constituting both heat and electrical insulation, are fastened by screws 69 to the side members of the frame 34, as shown in Fig. 5. Angle brackets 66 are fastened by bolts 67 to the lower portion of each slab 68, as shown in Fig. 5, and are provided with laterally extending stop members 52, which extend beneath the clutches 50, and have openings through which the movable electrodes 51 may pass. The movable electrodes 51 are suspended by the clutches 50 and the rods 49 from the electrode-operating levers 47, and depend through holes 53 in the lamp base 29 in alinement with the stationary electrodes 43.

Referring to Fig. 5, it will be seen that the lamp frames 34 are fastened to the base 29 and the ash tray 37 at an inclination to the vertical, the lower ends of said frames being further from the central supporting column than the upper ends. Consequently, the electrodes 51 and 41 are not alined vertically, but are in alinement with each other in the inclined plane represented by the inclination of the frames 34, as represented in Fig. 5. This inclination of the electrodes makes a more efficient lighting unit, in that, the light from the craters of the arc is reflected and directed outwardly and is not intercepted by the walls of the craters. This feature is already described and claimed in my co-pending application, Serial No. 312,326, filed the 13th day of October, 1928.

Each lamp unit comprises two pairs of stationary and two pairs of movable electrodes. The upper ends of each pair of movable electrodes are clamped within an electrode holder comprising a rear clamping member 54, having suitable grooves to receive the electrodes 51, and provided with recesses 55. A strip of insulation is applied to the rear face of the clamping member 54 between the electrodes, as shown in Fig. 6, and covering the recesses 55 into which the insulation may be pressed. A rod guide 57 is next applied to the outer face of this strip of insulation and it is provided with projections 58, which line up with the recesses 55, so that, when this rod guide is clamped in place it will be insulated from the clamping member 54, but its projections 58 will press into the insulation and press the latter into the recesses 55, so as to prevent turning of the rod guide with respect to the clamping member. A clamping bolt 60 extends through these parts, having a head 61 which fits against an insulating washer 62 applied to the rear face of the rod guide 57. The shank of the clamping bolt 60 extends through an insulating sleeve 63 inserted in an opening in said rod guide, as shown in Fig. 6, and also extends through the sheet of insulation 56 and through the clamping member 54 and the front clamping member 64. A wing nut 65 is screwed on the outer end of this clamping bolt. The upper end of the rod guide is bent laterally at 59, and this portion has a hole therein through which the rod 49 may slide.

The resistance coils 70 are mounted on the slabs 68 of insulating material, as shown in Fig. 2, and are thus carried by the frame 34 but insulated therefrom. A dashpot cylinder 71 is mounted on one side member of the frame 34, and a piston carried by the lower end of the rod 72 connected to the end of one of the levers 47, works in the dashpot cylinder 71, in the manner well understood in this art. The upper ends of the rods 49 are, of course, insulated from the ends of the levers 47 at the pivotal connection between these rods and the levers.

Each of the three lamp units mounted on the base has its own operating circuit controlled by a switch 79 mounted on the under side of the ash tray 37. From the switch 79, wire 73 leads to the right-hand lower stationary electrode holder, shown in Fig. 2, thence, the current passes through one of the stationary electrodes to the corresponding upper electrode and from the right-hand electrode holder for the movable electrodes through the wire 74 to the left-hand resistance coil 70. From the lower end of this resistance coil the current passes through wire 75 to the lower left-hand electrode holder, and, thence, through the stationary and corresponding movable electrode to the upper left-hand electrode holder, and, thence, by the wire 76 through the solenoid 44 and by wire 77 to the right-hand resistance coil 70, and from the lower end of this coil through the wire 78 to the switch 79. When a hollow supporting column is used, as shown, the main circuit connections or conductors may well be brought to the apparatus through this hollow tube, being taken out through the bottom thereof and brought up alongside the tube, as shown in Fig. 1, to the ash tray where the conductors are split into three leads 81, one going to each of the switches 79, as shown.

The apparatus shown here is adapted either to be supported from a stand on the floor or suspended from the ceiling. In the

latter case, an adequate support is provided on the ceiling for the central supporting column 10. I have shown the apparatus here as mounted in a stand comprising a central tubular post 82 receiving the lower end of column 10. The post 82 has a series of holes 83 therethrough adapted to receive the pin 84 by means of which the height of the arc above the floor may be varied. The legs 85 of the stand have their upper ends connected to the post 82, at 87, as shown, while their lower ends are separated and braced by the brace bars 88, the inner ends of which are connected at 89 to the lower end of the post 82, while the outer ends are connected to the legs at 90. Casters 86 may be provided on these legs if desired.

The apparatus which I have illustrated and described herein is one which is adapted to be suspended from the ceiling or supported from the floor in such a way that the arcs are at a distance of approximately nine or ten feet from the floor, so that by this means a large room may be completely flooded with light from the arcs. This makes the apparatus very convenient and suitable for use in hospitals, sanitariums, clubs, training houses or other places in which it is desired to subject a large number of people simultaneously to the beneficial effects of the rays of artificial sunlight coming from the arcs. By means of the counterpoise and the lamp base supporting the operating mechanism, the base with the operating mechanism may be easily pulled down so that the carbons are within reach of an operator, who can then fit the lamp with new carbons or make any adjustments or repairs that are necessary after which the lamp base can be shoved up to its normal position and will be held there by the spring lift devices. As already pointed out, any fumes coming from the arcs, instead of passing outwardly under the lower edge of the reflector, in which case they might prove disturbing to the patients being treated with the light, are vented upwardly through the space between the lamp base and the reflector and through the reflector dome. This lends itself very well to the withdrawal of these fumes or heated air through the top of the room by means of an exhaust fan, or otherwise, as may be desired.

In this apparatus, the reflector casts a zone of light which completely covers an area about six feet high, so that this zone can be occupied by as many as sixty to one hundred and fifty people, especially children, who can be treated simultaneously with this apparatus. The ash tray 37 not only functions to catch sparks or ash falling from the carbon, but also acts to reflect the light which might otherwise be cast downward. It constitutes a sort of circular reflector by which part of the light is reflected upwardly toward the conical reflector and thence down upon the lighted zone. Thus, all the light from the arcs is utilized to fill the light zone.

I am aware that the particular embodiment of my invention illustrated herein may be changed considerably without departing from the spirit of my invention, and, therefore, I claim my invention broadly as indicated by the appended claims.

What I claim is:

1. An arc lighting apparatus comprising a central supporting post, a reflector fixed to and carried by said post, a lamp base slidable on said post, a counterpoise carried by said post and connected to said base, electrode-operating mechanism mounted on said base, movable electrodes depending from said operating mechanism through said base, and stationary electrodes supported below said base in alinement with said movable electrodes.

2. An arc lighting apparatus comprising a central supporting post, a reflector fixed to and carried by said post, a lamp base slidable on said post, a spring-lift device carried by said post and having a flexible strap connected to said base to counterbalance the weight of said base and parts carried thereby, electrode-operating mechanism supported on said base, movable electrodes depending from said operating mechanism through said base, and stationary electrodes supported below said base in alinement with said movable electrodes.

3. An arc lighting apparatus comprising a central supporting post, a lamp base slidable on said post, electrode-operating mechanism supported on said base, movable electrodes depending from said operating mechanism through said base, stationary electrodes supported below said base in alinement with said movable electrodes, and a reflector fixed to and carried by said post with its upper edge normally positioned adjacent the lamp base and having a central opening through which the operating mechanism is movable as the base is raised and lowered on the post.

4. An arc lighting apparatus comprising a central supporting post, a lamp base slidable on said post, a counterpoise carried by said post and connected to said base, electrode-operating mechanism supported on said base, movable electrodes depending from said operating mechanism through said base, stationary electrodes supported below said base in alinement with said movable electrodes, and a reflector fixed to and carried by said post and having a central opening through which the operating mechanism is movable as the base is raised and lowered on the post.

5. An arc lighting apparatus comprising a central supporting post, a reflector dome carried by said post, a reflector attached to

the lower edge of said dome, a lamp base slidable on said post, electrode-operating mechanism carried by said base and normally housed within the dome, movable electrodes depending from said operating mechanism through said base, and stationary electrodes supported below said base in alinement with the movable electrodes.

6. An arc lighting apparatus comprising a central supporting post, a reflector dome carried by said post, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a counterpoise carried by said post and connected to said base to counterbalance the weight of said base and parts carried thereby, electrode-operating mechanism mounted on said base and normally housed within the dome, movable electrodes depending from said operating mechanism through said base, and stationary electrodes supported below said base in alinement with the movable electrodes.

7. An arc lighting apparatus comprising a central supporting post, a spider secured to the upper end of said post, a reflector dome having its upper edge secured to said spider, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, electrode-operating mechanism carried by said base and normally housed within the dome, movable electrodes depending from said operating mechanism through said base, and stationary electrodes supported below said base in alinement with the movable electrodes.

8. An arc lighting apparatus comprising a central supporting post, a spider fixed to the upper end of said post, a reflector dome having its upper edge secured to said spider, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a counterpoise carried by said post and connected to said base to counterbalance the weight of the base and parts mounted thereon, electrode-operating mechanism carried by said base and normally housed within the dome, movable electrodes depending from said operating mechanism through said base, and stationary electrodes supported below said base in alinement with the movable electrodes.

9. An arc lighting apparatus comprising a central supporting post, a reflector dome carried by said post, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a plurality of lamp frames mounted on said base, electrode-operating mechanism carried by said frames, movable electrodes depending from said mechanism through the base, and stationary electrodes supported below said base in alinement with the movable electrodes.

10. An arc lighting apparatus comprising a central supporting post, a spider secured to the upper end of said post, a reflector dome having its upper edge secured to said spider, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a plurality of lamp frames mounted on said base, electrode-operating mechanism carried by said frames, movable electrodes depending from said mechanism through the base, and stationary electrodes supported below said base in alinement with the movable electrodes.

11. An arc lighting apparatus comprising a central supporting post, a reflector fixed to and carried by said post, a lamp base slidable on said post, a counterpoise carried by the upper end of said post and connected to said base to counterbalance the weight of said base and the parts carried thereby, a plurality of lamp frames mounted on said base, electrode-operating mechanism carried by said frames, movable electrodes depending from said mechanism through the base, and stationary electrodes supported below said base in alinement with the movable electrodes.

12. An arc lighting apparatus comprising a central supporting post, a reflector dome carried by said post, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a counterpoise carried by the upper end of said post and connected to said base to counterbalance the weight thereof and the parts carried thereby, a plurality of lamp frames mounted on said base, electrode-operating mechanism carried by said frames, movable electrodes depending from said mechanism through the base, and stationary electrodes supported below said base in alinement with the movable electrodes.

13. An arc lighting apparatus comprising a central supporting post, a spider fixed to the upper end of said post, a reflector dome having its upper edge secured to said spider, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a counterpoise carried by the upper end of said post and connected to said base to counterbalance the weight of said base and the parts carried thereby, a plurality of lamp frames mounted on said base, electrode-operating mechanism carried by said frames, movable electrodes depending from said mechanism through the base, and stationary electrodes supported below said base in alinement with the movable electrodes.

14. An arc lighting apparatus comprising a central supporting post, a reflector dome carried by said post, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a plurality of lamp frames mounted on said base and having tail members extending downwardly through said base, electrode-operating mechanism carried by said frames and normally housed within the dome, movable electrodes

depending from said mechanism through the base, and stationary electrodes supported by said tail members below said base in alinement with the movable electrodes.

15. An arc lighting apparatus comprising a central supporting post, a reflector fixed to and carried by said post, a lamp base slidable on said post, a plurality of lamp frames mounted on said base and having tail members extending downwardly through said base, electrode-operating mechanism carried by said frames, movable electrodes depending from said mechanism through the base, stationary electrodes supported by said tail members below said base in alinement with the movable electrodes, and an ash tray secured to the lower ends of said tail members.

16. An arc lighting apparatus comprising a central supporting post, a reflector dome carried by said post, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a plurality of lamp frames mounted on said base and having tail members extending downwardly through said base, electrode-operating mechanism carried by said base and normally housed within the dome, movable electrodes depending from said mechanism through the base, stationary electrodes supported by said tail members below said base in alinement with the movable electrodes, and an ash tray secured to the lower ends of said tail members.

17. An arc lighting apparatus comprising a central supporting post, a spider secured to the upper end of said post, a reflector dome having its upper edge secured to said spider, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a plurality of lamp frames mounted on said base and having tail members extending downwardly therethrough, electrode-operating mechanism carried by said frames and normally housed within said dome, movable electrodes depending from said mechanism through the base, stationary electrodes supported by said tail members below said base in alinement with the movable electrodes, and an ash tray secured to the lower ends of said tail members.

18. An arc lighting apparatus comprising a central supporting post, a reflector dome carried by said post, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a plurality of lamp frames mounted on said base and having tail members extending downwardly through said base, electrode operating-mechanism carried by said frames and normally housed within said dome, movable electrodes depending from said mechanism through the base, stationary electrodes supported by said tail members below said base in alinement with the movable electrodes, a counterpoise carried by the upper end of said post and connected to said base to balance the weight of said base and the mechanism carried thereby, and an ash tray secured to the lower ends of said tail members.

19. An arc lighting apparatus comprising a central supporting post, a spider fastened to the upper end of said post, a reflector dome having its upper edge secured to said spider, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, a counterpoise carried by the upper end of said post and connected to said base to counterbalance the weight thereof and the parts carried thereby, a plurality of lamp frames mounted on said base and having tail members extending downwardly through said base, electrode-operating mechanism carried by said frame, movable electrodes depending from said mechanism through the base, stationary electrodes supported by said tail members below said base in alinement with the movable electrodes, and an ash tray secured to the lower ends of said tail members.

20. An arc lighting apparatus comprising a central supporting post, a reflector fixed to and carried by said post, a lamp base slidable on said post, electrode-operating mechanism supported on said base, movable electrodes depending from said mechanism through said base, and stationary electrodes supported below said base in alinement with the movable electrodes, said reflector having a central opening through which said mechanism is movable as the base is raised and lowered, and the edge of said base being normally positioned adjacent the upper edge of said reflector and spaced from the reflector to permit the escape of arc fumes therebetween.

21. An arc lighting apparatus comprising a central supporting post, a reflector dome carried by said post, a reflector attached to the lower edge of said dome, a lamp base slidable on said post, electrode-operating mechanism supported on said base and normally housed within said dome, movable electrodes depending from said mechanism through said base, and stationary electrodes supported below said base in alinement with the movable electrodes, the edge of said base being normally spaced from the reflector to permit the escape of arc fumes therebetween.

22. An arc lighting apparatus comprising a central supporting post, a spider carried by the upper end of said post, a reflector dome having its upper edge secured to said spider, a reflector secured to the lower edge of said dome, a lamp base slidable on said post, electrode-operating mechanism supported on said base, movable electrodes depending from said mechanism through said base, and stationary electrodes supported below said base in alinement with

the movable electrodes, the edge of said base being normally spaced from the reflector to permit the escape of arc fumes therebetween into the reflector dome.

23. An arc lighting apparatus comprising a central supporting post, a reflector fixed to and carried by said post, a lamp base slidable on said post, a plurality of spacing fingers carried by said base at the edge thereof and adapted to contact with the reflector adjacent the upper edge thereof when the base is in normal position, to space the edge of said base from the reflector, electrode-operating mechanism supported on said base, movable electrodes depending from said mechanism through said base, and stationary electrodes supported below said base in alinement with the movable electrodes.

24. An arc lighting apparatus comprising a central supporting post, a reflector dome carried by said post, a reflector secured to the lower edge of said dome, a lamp base slidable on said post, a plurality of spacing fingers carried by the base adjacent the edge thereof and adapted to contact with the reflector to space the edge of the lamp base from said reflector, electrode-operating mechanism supported on said base and normally housed within the dome, movable electrodes depending from said mechanism through said base, and stationary electrodes supported below said base in alinement with the movable electrodes.

25. An arc lighting apparatus comprising a central tubular supporting post, a reflector fixed to and carried by said post, and having a central opening through which the lamp-operating mechanism is movable, a lamp base slidable on said post, a counterpoise carried by the upper end of said post and connected to said base to balance the weight of said base and the parts carried thereby, electrode-operating mechanism supported on said base, movable electrodes depending from said operating mechanism through said base, and stationary electrodes supported below said base in alinement with said movable electrodes, and electrical conductors passing through said tubular post for supplying current to said electrodes.

26. An arc lighting apparatus comprising a central tubular supporting post, a lamp base slidable on said post, an ash tray fixed with respect to said base, electrode-operating mechanism supported on said base, movable electrodes depending from said operating mechanism through said base, stationary electrodes supported between said base and ash tray in alinement with said movable electrodes, a reflector fixed to and carried by said post and having a central opening through which the electrode-operating mechanism is movable as the base is raised and lowered on the post, a plurality of switches carried on said ash tray and electrically connected with the circuits of said lamp, and electrical conductors leading to said switches and passing through said tubular post.

27. In an arc lamp, the combination of a movable electrode, a clutch cooperating therewith, a clutch rod, a pair of clamping members clamped about said electrode, one of said members having recesses therein, a strip of insulation applied to said member covering said recesses, a rod guide having a portion lying against said insulation and provided with projections fitting said recesses, said guide having an arm with a hole through which the rod extends, and a bolt extending through said guide and clamping members to clamp them together.

28. An arc lighting apparatus comprising a central supporting post, a lamp base slidable on said post, a plurality of lamp frames mounted on said base and inclined to the vertical, the lower ends of said frames being spaced further from the post than the upper ends, electrode-operating mechanism carried by said frames, movable electrodes depending from said mechanism through the base, and stationary electrodes supported below said base in alinement with the movable electrodes and in parallelism with the frames, and a reflector fixed to and carried by said post and having a central opening through which said mechanism is movable as the base is raised and lowered on the post.

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