

W. J. HARVEY.
LIGHT CONTROLLING DEVICE.
APPLICATION FILED DEC. 31, 1917.

1,335,832.

Patented Apr. 6, 1920.

2 SHEETS—SHEET 1.

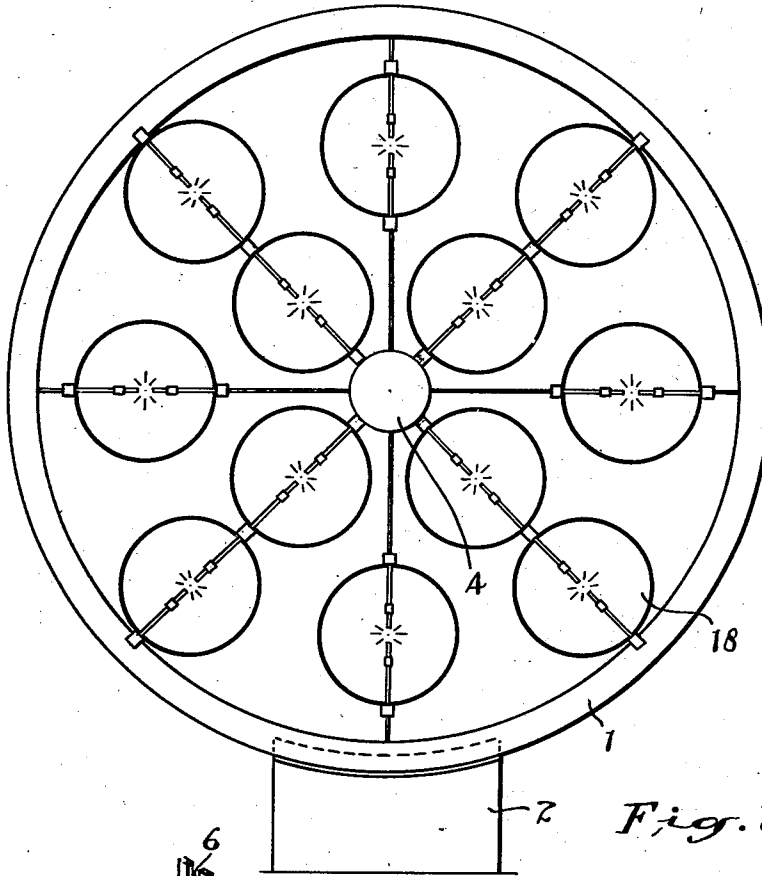


Fig. 1.

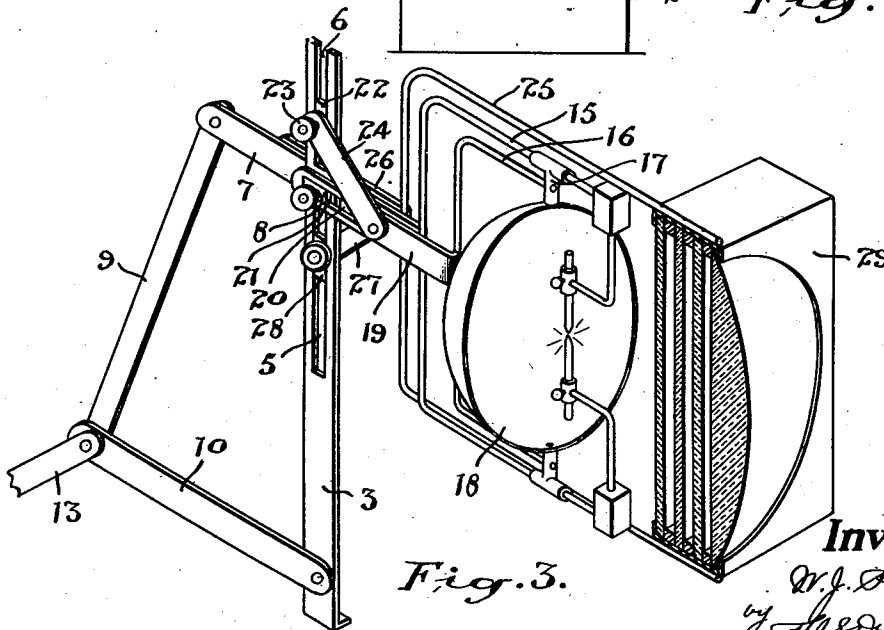


Fig. 3.

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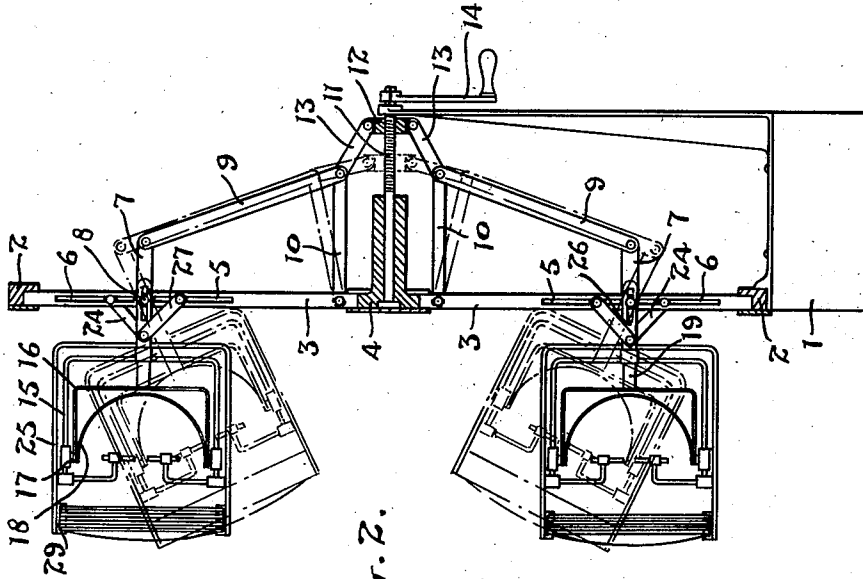


Fig. 2.

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UNITED STATES PATENT OFFICE.

WALTER JAMES HARVEY, OF TORONTO, ONTARIO, CANADA.

LIGHT-CONTROLLING DEVICE.

1,335,832.

Specification of Letters Patent.

Patented Apr. 6, 1920.

Application filed December 31, 1917. Serial No. 209,786.

To all whom it may concern:

Be it known that I, WALTER JAMES HARVEY, a subject of the King of Great Britain, and resident of the city of Toronto, county of York, Province of Ontario, in the Dominion of Canada, have invented certain new and useful Improvements in Light-Controlling Devices, as described in the following specification and illustrated in the accompanying drawings, that form part of the same.

The principal objects of this invention are to devise an apparatus by means of which rays of light from a plurality of individual light sources may be concentrated and effectively controlled particularly in the application of light for therapeutic and ophthalmic work, and further to devise an apparatus which may be very easily manipulated and adjusted.

The principal feature of the invention consists in the novel construction and arrangement of parts, whereby a plurality of individual light concentrating units, each having a separate source of light may be operated in unison to concentrate their rays at different foci, and whereby the relative arrangement between the light, the reflector and light control screens or lenses may be varied uniformly in the operation of the device.

In the accompanying drawings, Figure 1 is a front elevational view of a device constructed in accordance with this invention.

Fig. 2 is a longitudinal mid sectional view through the device.

Fig. 3 is an enlarged perspective detail partly in section of one of the individual units and the operating mechanism therefor.

In my previous application for patent for a device for the concentration of light rays filed under Serial Number 204,060 and dated Nov. 26th, 1917, I have shown an arrangement of a plurality of individual reflector members so connected and operated as to effect the concentration of the rays of light from a common light source upon varying foci and in the present invention I utilize the same general structure of main frame, the ring 1 being rigidly supported upon the base 2 and a plurality of radial arms 3 being rigidly supported between said ring and the circle shaped central member 4.

Each of the arms 3 are formed with longitudinal slots 5 and 6 toward their outer ends.

7 are bars pivotally secured upon the bolts 8 secured in the radial arms 3 between the slots 5 and 6. The inner ends of the bars 7 are connected by the bars 9 to the free end of the swinging links 10 which are pivotally connected by fixed pivots to the radial arms 3 adjacent to the center.

A threaded spindle 11 is rotatably mounted in the central member 4 and a nut 12 threaded on said spindle is connected to the inner ends of the bar 9 by the links 13 so that upon the rotation of the spindle by means of the crank 14 the nut will travel forwardly or backwardly and operate the bars 9 to swing the bars 7 on their pivots.

U-shaped frames 15 are rigidly secured to the outer ends of the bars 7 and upon the ends of these frames are carried any desirable form of light source which is here shown in the form of an electric arc.

A U-shaped frame 16 of slightly smaller dimensions than the frame 15 is arranged within each of the frames 15 having at their outer ends the supporting members 17 which are slidably arranged upon the sides of the frames 15 and which carry the reflectors 18. These reflectors are of any desirable shape best suited to the work for which the device is adapted to be used. Bars 19 are secured to the inner sides of the frames 16 and these are formed with longitudinal slots 20 through which the bolts 8 extend.

Blocks 21 with beveled edges are arranged upon the bolts 8 within the slots 20 and suitable thumb screws are threaded on the bolts so that by the tightening of the thumb screws against the end blocks the bars 19 may be held from longitudinal movement.

Blocks 22 are arranged in the slots 6 in the outward ends of the arms 3 having their stems and thumb nuts 23.

Links 24 are pivotally connected to the bars 19 at the outward ends of the slots and at the other end are pivotally secured upon the threaded stems on the blocks 22, said blocks and thumb nuts being so designed that by tightening the nut the end of the link may be held securely from movement in relation to the arms 3.

U-shaped frames 25 corresponding with the frames 15 and 16 are supported on longitudinally slotted bars 26 which are slidably mounted on blocks carried on the bolts 8 at the opposite side of the arms 3 from the bars 19 and pivotal links 27 similar to the

links 24 are connected thereto at the forward end of the slot and to sliding lock blocks 28 arranged in the slots 6 in the arms 3.

The frames 25 extend beyond the light supporting frames 15 and are adapted to carry the screen and lens holding receptacles 29.

It will be understood that the center of the lens supporting receptacles and the center of the reflectors are arranged in alignment with the center of the light.

In the operation of the device the rotation of the threaded spindle causes the traveling of the nut 12 upon the spindle and the consequent swinging of the links 10, bars 9 and bars 7 to alter the focusing of the rays of light from the several reflectors upon a desired point. This operation is clearly illustrated in Fig. 2 of the drawings in which the lights are shown arranged at two different angles, one position being in dotted lines. If it is desirable that the focus of the light of each individual reflector be maintained constant the thumb nuts at the ends of the links 24 and 27 are loosened so that as the bars 7 tilt the blocks may slide freely in the slots 5 and 6. If, however, it is desired that the focus of the individual reflectors be altered according to the change in the angle of inclination in the beam of light the thumb nut of the link 24 is tightened to prevent the sliding of the block in the slot 6 and the thumb nut on the bolt 8 is loosened, consequently as the bar 7 is tilted the slotted bar 19 slides upon the supporting block and the reflector is drawn away from the light.

If it is desired to alter the distance between the light and the lens or screens the thumb nut fastening the block in the slot 5 is tightened and the nut controlling the bar 26 is loosened so that the links 27 will cause the U-frame 25 to change its relation with the other frames as the bars 7 tilt. Either or both of these adjustments may be made according to the requirements, or the device may be operated without either adjustment and the relation of the reflector, light and screens be retained fixed.

What I claim as my invention is:—

1. A light controlling device, comprising a plurality of supporting members extending radially from a common center, light concentrating units pivotally mounted on said supports, and centrally disposed means connected with said light units adapted to swing said units in unison on their pivots to adjust the focus of the entire battery of units.

2. A light controlling device, comprising, a plurality of individual light units pivotally supported, light concentrating units ad-

justably supported from said light units, means for swinging said light units upon their pivotal supports in unison, and means for effecting an automatic adjustment of said light concentrating units in relation to said light units operating coincident with the swinging of same.

3. A light controlling device, comprising, a plurality of individual light units pivotally supported, light concentrating units adjustably supported from said light units, means for swinging said light units upon their pivotal supports in unison, and means adapted to be adjusted to effect the automatic adjustment between the lights and their cooperating units or to maintain the lights and their cooperating concentrating units in fixed relation the one to the other.

4. A light controlling device, comprising, a frame, a plurality of bars pivotally supported on said frame and each supporting a light at one end, means connected to the other ends of said bars for swinging same on their pivots, reflector supporting members slidably supported from said light supports, means for locking said sliding reflector supporting members, links pivotally connected to said reflector supporting members and slidably connected to the frame, and means for locking said link members to the frame.

5. A light controlling device, comprising, a frame, a plurality of pivotal members supported on said frame and each supporting lights, reflector supporting members adjustably supported from said light supports, frames, adjustably supported in relation to said reflectors and said light supporting frames and carrying screens or lenses, means for swinging said reflector members to varying angles in unison, and means for effecting the adjustment of said reflectors and said light screen frames independently or in unison with each other.

6. A light controlling device, comprising, a rigid frame, a plurality of pivotal arms supported on said frame and each having a U-shaped extension, individual light sources secured in said U-shaped extensions, U-shaped frames slidably connected with the aforesaid U frames, reflectors carried in the latter frames, U-frames slidably adjustable independently of the aforesaid frames and carried upon said pivotal members, screen or lens frames secured in the latter U-shaped frames beyond the light sources, means for adjusting said reflector and screen supporting frames in relation to said lights and to each other, and means for swinging said reflector supports in unison.

WALTER JAMES HARVEY.