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2,802,094

PHOTOGRAPHIC LIGHTING ASSEMBLY

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2 Sheets-Sheet 1

Fig. 1

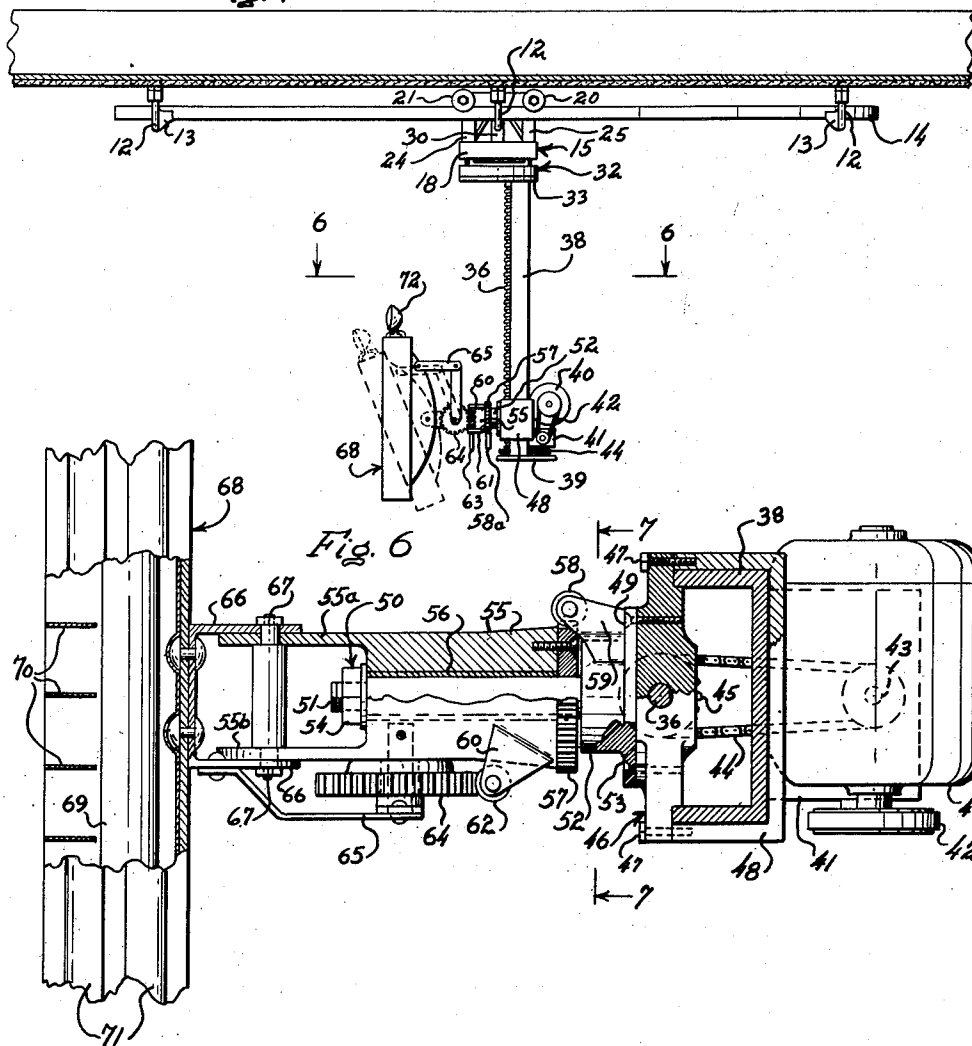


Fig. 6

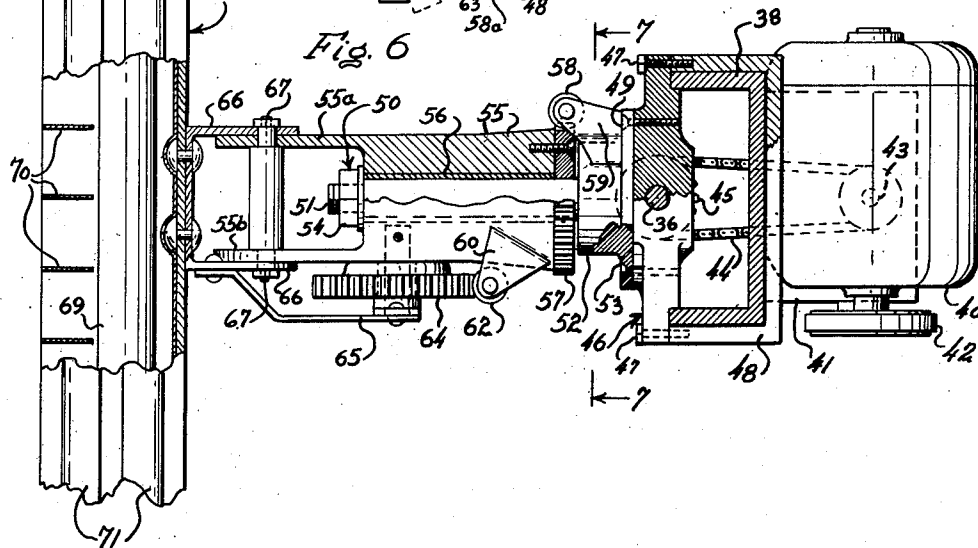
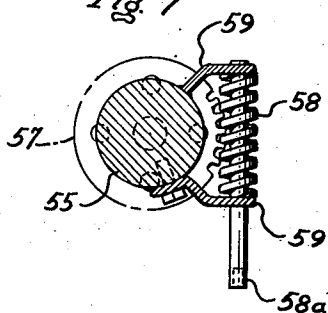


Fig. 7



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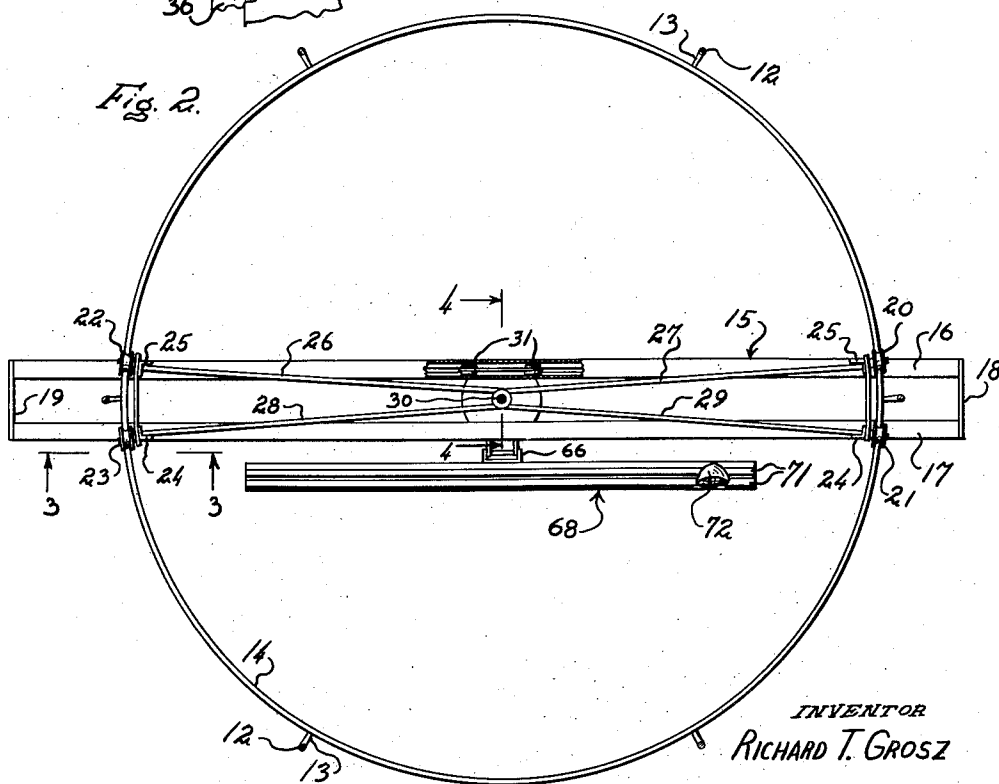
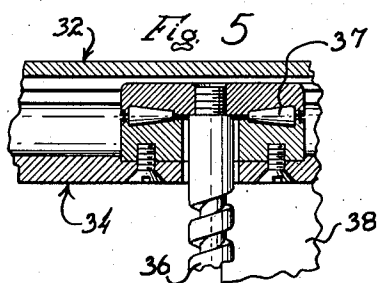
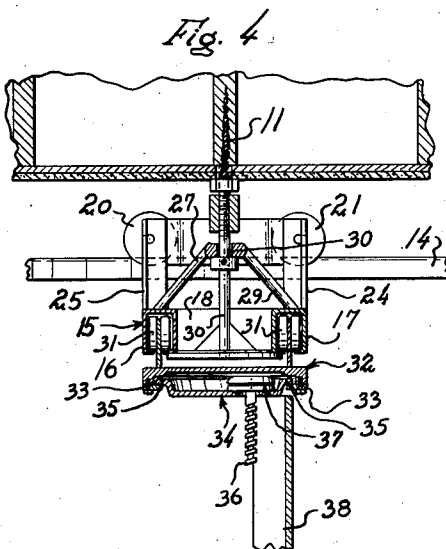
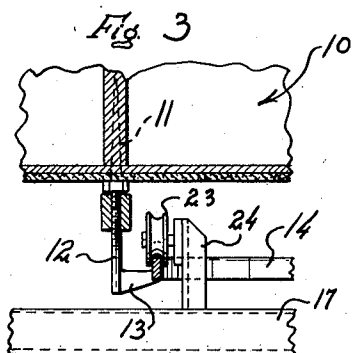
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PHOTOGRAPHIC LIGHTING ASSEMBLY

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2 Sheets-Sheet 2



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PHOTOGRAPHIC LIGHTING ASSEMBLY

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2 Claims. (Cl. 240—1.3)

This invention relates to photographic equipment. More particularly, it relates to photographic lighting equipment for use by commercial photographers in their studios.

Commercial photographers spend a great deal of time and effort in positioning their subject as desired and then playing the photographic lights upon the subject's features from a particular angle or angles to provide the desired effects. To attain these effects it is common for a photographer to utilize a combination of several lights as a substitute for a single light for the reason that he cannot position either of his lights as desired. The lights he uses are ordinarily supported from the floor of the studio and require considerable manipulation, time and effort. My invention is designed to eliminate many of the difficulties encountered by a photographer heretofore.

It is a general object of my invention to provide a novel and improved photographic lighting assembly of cheap and simple construction and operation.

A more specific object is to provide a novel and improved photographic lighting assembly which for all practical purposes, gives quick, simple and substantially universal movement of the light or lights supported thereby to facilitate the positioning thereof.

A still more specific object is to provide a novel and improved photographic lighting assembly capable of supporting the light for practical purposes at substantially any desired point across the room.

Another object is to provide a photographic lighting assembly capable of supporting lights at substantially any desired point across the room and having at the same time substantially universal tilting movement.

Another object is to provide a photographic lighting assembly which will substantially reduce the amount of time and effort required to properly position photographic lights in order to obtain desired effects.

Another object is to provide a novel and improved photographic lighting assembly using conventional photographer's lights mounted so as to be capable of universal movement in combination with a spotlight mounted thereupon and capable of movement longitudinally thereof.

Another object is to provide a photographic lighting assembly capable of being vertically adjusted more quickly and easily than heretofore.

Another object is to provide a photographic lighting assembly suspended from the ceiling in an out-of-way position and capable of being moved to almost any point within the room and of being adjusted universally thereat.

These and other objects and advantages of my invention will more fully appear from the following description made in connection with the accompanying drawings, wherein like reference characters refer to the same or similar parts throughout the several views, and in which:

Fig. 1 is a side elevational view of one embodiment of my invention;

Fig. 2 is a plan view of the same;

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Fig. 3 is a fragmentary sectional view taken along line 3—3 of Fig. 2;

Fig. 4 is a fragmentary sectional view taken along line 4—4 of Fig. 2;

Fig. 5 is a detailed fragmentary sectional view on an enlarged scale of the mounting for the upper end of the vertical screw;

Fig. 6 is a plan view of the lower portion of the lighting assembly taken approximately along line 6—6 of Fig. 1; and

Fig. 7 is a fragmentary sectional view taken along line 7—7 of Fig. 6 and showing the worm gear for tilting the lights.

One embodiment of my invention is shown in Figs. 1—7 supported from an overhead member such as a ceiling 10 by lag bolts 11 and supporting bolts 12 having inwardly extending ears 13 welded thereto and may include a circular track 14 welded to the supporting ears 13. This circular track will preferably be approximately 12 feet in diameter or slightly less than the smallest dimension of the room taken in a horizontal plane. Movably mounted on the circular track 14 in suspended relation is a straight track indicated generally as 15 which is comprised of a pair of elongated channel members 16 and 17 carrying end plates 18 and 19 at their opposite ends. This straight track 15 is supported from the circular track 14 by two pairs of rollers 20, 21 and 22, 23. These rollers, as best shown in Fig. 4, are rotatably mounted in the upper end portions of supporting posts such as 24, 25 the lower end portions of which are welded to the channel members 16 and 17. The channels 16 and 17 are each provided with a pair of stabilizing rods 26, 27 and 28, 29, these rods being pivotally mounted at their inner ends upon a pivot rod 30 and being welded at their outer ends to the respective channels just inwardly of the circular track as can best be seen in Figs. 2 and 4. The length of the straight track 15 is preferably about 15 feet, or, longer than the diameter of the circular track 14. As can best be seen in Fig. 2, the straight track is mounted to extend along the diameter of the circular track and to pivot or swing around the length of the circular track and about the center of the circle.

Movably supported in the channels 16 and 17 of the straight track 15 by means of four rollers 31, is a supporting disc or member 32 which has a downwardly and inwardly extending flange 33, this flange forming a guideway to support an upwardly facing saucer-like disc 34 which has an outwardly extending flange 35 which rides within the guide way formed by the flange 33 and engages the same. The disc 34 is capable of rotating freely within the guideway formed by the flange 33 and is supported thereby.

Rotatably mounted upon the disc 34 for free rotation about its longitudinal axis is an elevating screw 36, the upper end portion of this screw being mounted on tapered roller bearings 37 to facilitate the free turning movement thereof. This elevating screw 36 depends from the disc 34 as best shown in Figs. 1 and 4, and serves in cooperation with a gear mechanism to be hereinafter described to adjust the elevation of the lighting assembly.

Fixedly secured to the bottom of the disc 34 and depending therefrom is a U-shaped guide channel 38. This guide channel is rigid and extends downwardly a substantial distance from the disc 34. Its cross-sectional shape can best be seen in Fig. 6. Secured to the lower end of the guide channel 38 is a platform 39, the lower end portion of the elevating screw 36 being journaled therein for free rotational movement about its longitudinal axis. Mounted on the upper surface of the platform 39 is a reversible motor 40 and a gear box 41 the two being connected by a drive belt 42. A shaft 43 depends from the gear box and is connected by a chain 44 with

the lower end of the elevating screw 36 which has a gear 45 secured thereto. In this manner, the reversible motor 40 can rotate the elevating screw 36 about its longitudinal axis at will and in either direction.

Mounted on the elevating screw 36 in threadedly engaging relation is a head 46, the elevating screw extending through the head and being threaded thereto so that as the elevating screw is turned the head will progress upwardly or downwardly relative thereto, depending upon the direction of rotation. This head is secured by bolts 47 to a U-shaped encasing member 48 which completely encircles the guide channel 38 as best shown in Fig. 6. Thus it can be seen that the encasing member 48 prevents the head 46 from rotating with the elevating screw 36 thereby causing the head to move upwardly and downwardly as the elevating screw rotates.

Rigidly mounted on the forward surface of the head 46 and secured thereto by bolts 49, is an elongated supporting member indicated generally as 50. This supporting member 50 is comprised of a shaft 51 having a shoulder 52 adjacent one of its ends and a flange 53 of diameter greater than the shoulder 52 at the extreme end. The bolts 49 pass through the flange 53 so that the flange acts as a supporting shoulder or flange for the entire support 50.

A nut 54 secures to the shaft 51 a bifurcated member 55 as best shown in Fig. 6. A bushing 56 insures that the member 55 can rotate freely about the longitudinal axis of the shaft 51. This bifurcated member 55 has a worm gear or driven element 57 formed on the outer peripheral surface of its inner end, this gear cooperating with a vertically extending worm or driving element 58 which is supported by a pair of outwardly extending support ears 59 which in turn are rigidly secured to the support member 50 as best shown in Fig. 6. The worm 58 has a depending crank portion 58a by which the worm 58 may be turned to cause the worm gear 57 to turn the bifurcated member 55 about the longitudinal axis of the shaft 51.

Fixedly mounted upon the outer surface of the bifurcated member 55 adjacent the gear 57 is a pair of outwardly extending support ears 60 and 61. These support ears carry a second worm or driving element 62 with a downwardly depending crank shaft 63 as best shown in Fig. 1. This worm is very similar to the worm 58 and is similarly mounted for rotation about its longitudinal axis. Cooperating with this worm is a worm gear 64 rotatably mounted on the side of the bifurcated member 55 and rigidly connected by rigid linkage 65 to a U-shaped support bracket 66. This U-shaped support bracket is pivotally mounted upon the bifurcated ends 55a and 55b of the bifurcated member 55 as best shown in Fig. 6, so that it may swing in a vertical plane about the horizontal axis of a pivot bolt 67 extending between the ends of the bifurcated member 55.

Fixedly secured to the U-shaped support bracket 66 and extending outwardly therefrom in a substantially vertical plane is a light unit indicated generally as 68. This light unit, as best shown in Fig. 2, is elongated and has a plurality of fluorescent lights such as 69 therein. It also has a plurality of vertical shutters 70 which extend forwardly ahead of the lights 69.

Mounted on the upper and outer surface of the light unit 68 by means of a channeled track 71 is a spotlight 72, this spotlight being capable of being slid longitudinally of the lighting unit 68 and throughout the length thereof.

In use, the circular track 14 is mounted in depending relation upon the ceiling of a photographer's studio, the diameter of the track being slightly less than the width of the room. The straight track is slightly longer than the diameter of the circular track and can be swung about the center of the track at any angle desired, the ends of the straight track extending slightly outwardly beyond the circular track. The supporting disc 34 can be moved anywhere along the length of the straight track 15 by means of the rollers 31 and since the straight track can

be rotated anywhere within a 360° arc about the center of the circle, it is possible for the circular disc to be positioned at any desired point within a circle described by the outer ends of the straight track 15. This means that the light unit 68 may be positioned in a horizontal plane at any point within that area.

The elevation of the light unit 68 can be regulated as desired by controlling the motor 40. When the motor is operated, the head 46 is caused to raise or lower, depending upon the direction of rotation of the elevating screw 36 and then carries the lighting unit with it, the entire movement being guided by the guide channel 38 in combination with the head 46 and the encasing member 48. Thus it can be seen that the lighting unit 68 can be positioned by means of the structure just described at any point within a circle described by the outer ends of the straight track 15 and within the length of the elevating screw 36. The range of elevation is governed solely by the length of the elevating screw 36.

By means of the worms 58 and 62 with their cooperating worm gears 57 and 64, universal tilting movement of the lighting unit is accomplished. It can be readily seen that by controlling the crank shaft portion 58a the worm 58 can be turned to cause the lighting unit 68 to rotate about the horizontal axis of the shaft 51 within a 360° arc. By operating the worm 62 the lighting unit 68 may be readily pivoted about a horizontal axis transverse to the axis of the shaft 51 and within a sufficiently large arc to meet all of the needs of a photographer. In addition to this tilting movement of which the unit is capable and which is for all practical purposes universal, the photographer may position the spotlight 72 as desired anywhere along the length of the lighting unit 68. Thus it can be seen that substantially universal positioning of the spotlight 72 is also possible.

When using my photographic lighting assembly it is possible to obtain light positioning which heretofore has been impossible without utilizing a large number of individual lights. With my lighting assembly it is possible to position lights so as to obtain optimum lighting effects and this is all accomplished by a single photographer from substantially a single position within the room without requiring repeated trips back and forth to the variously positioned lights in order to adjust the same as has been heretofore the custom. It can be readily seen that a great deal of time and effort can be saved through the use of my lighting assembly and that in addition to this saving, a much more practical and efficient lighting can be attained.

It should be noted that through the use of my photographic lighting assembly, the photographer need not worry about a large number of lights and props cluttering up the photographer's studio. All of the equipment is suspended from the ceiling and can be elevated to a position substantially adjacent thereto so that it is entirely out of the way when not needed. It can be readily seen that such a lighting assembly is highly desirable from a standpoint of appearance of the studio as well as practicality.

It should also be noted that my photographic lighting assembly can be readily adjusted vertically more quickly and easily than has heretofore been possible with photographer's lights. There is little if any effort involved in adjusting the elevation of this lighting assembly and by a few manipulations the desired elevation and tilt of the lighting unit 68 can be attained.

It will of course be understood that various changes may be made in the form, details, arrangement and proportions of the various parts without departing from the scope of my invention.

What is claimed is:

1. A photographic lighting assembly for suspending a light from the ceiling of a room wherein photographs are taken, said assembly comprising a circular guideway adapted to be secured to the ceiling of such a room, an elongated straight guideway having a length at least

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equal to the diameter of said circular track, mechanism movably mounting said straight guideway on said circular guideway at opposite sides of the latter and in suspended relation and constructed and arranged to permit said straight guideway to be swung about a 360° arc in a horizontal plane, a vertically extending guideway movably mounted on said straight guideway and depending therefrom, a motor supported by the lower end portions of said vertically extending guideway, an elongated screw member journaled on said vertically extending guideway and extending along the length thereof, a gear connected to said motor in driven relation and drivably connected with said screw to rotate the same about its longitudinal axis, a head mounted on said screw in threaded relation, said head being driven vertically by rotation of said screw about its longitudinal axis, and a light-supporting structure carried by said head and movable vertically therewith when said head is driven by said screw as a result of rotation of said gear by said motor.

2. The structure defined in claim 1 wherein said light-supporting structure includes worm-gear-driving mechanism for rotating portions of said structure 360° about

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a horizontal axis and for rotating other portions of said structure about a horizontal axis extending transversely to said first mentioned axis.

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