

Aug. 16, 1966

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3,267,274

TELEVISION AND FILM STUDIO LAMP

Filed Nov. 26, 1963

4 Sheets-Sheet 1

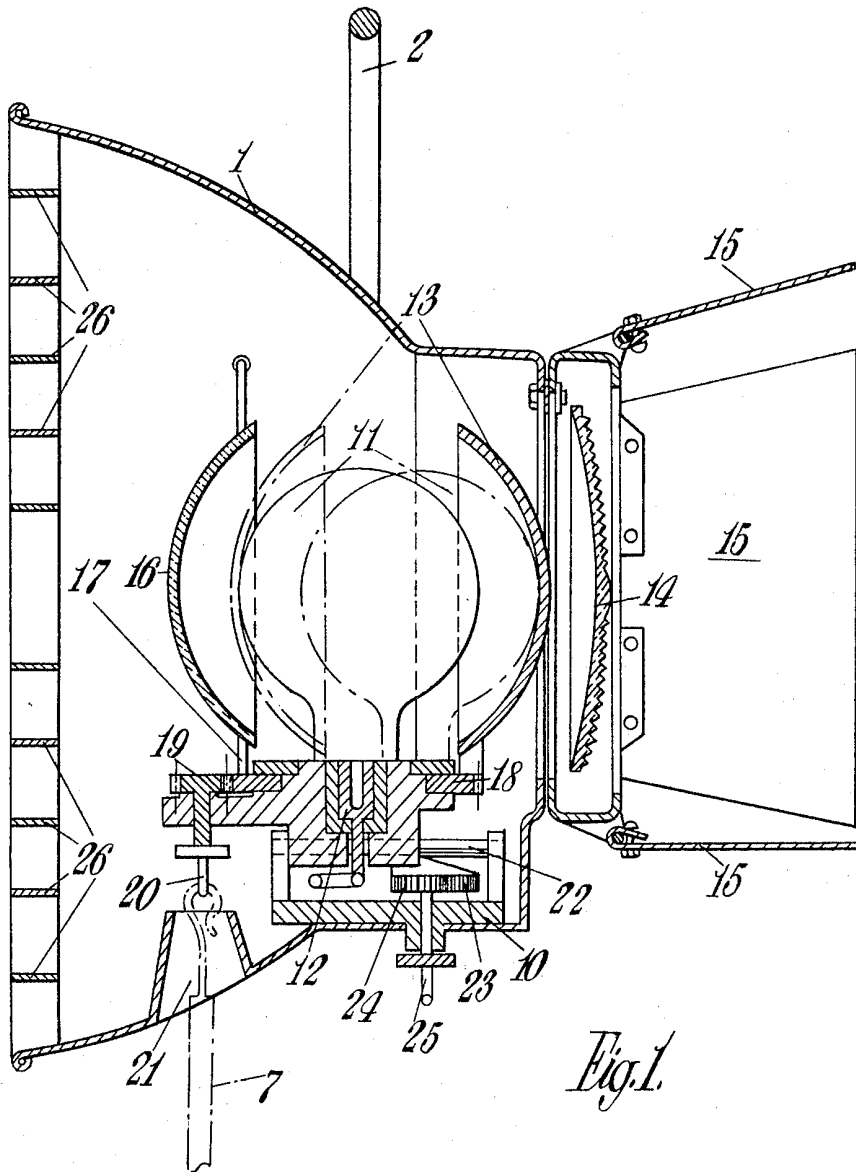


Fig. 1.

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4 Sheets-Sheet 2

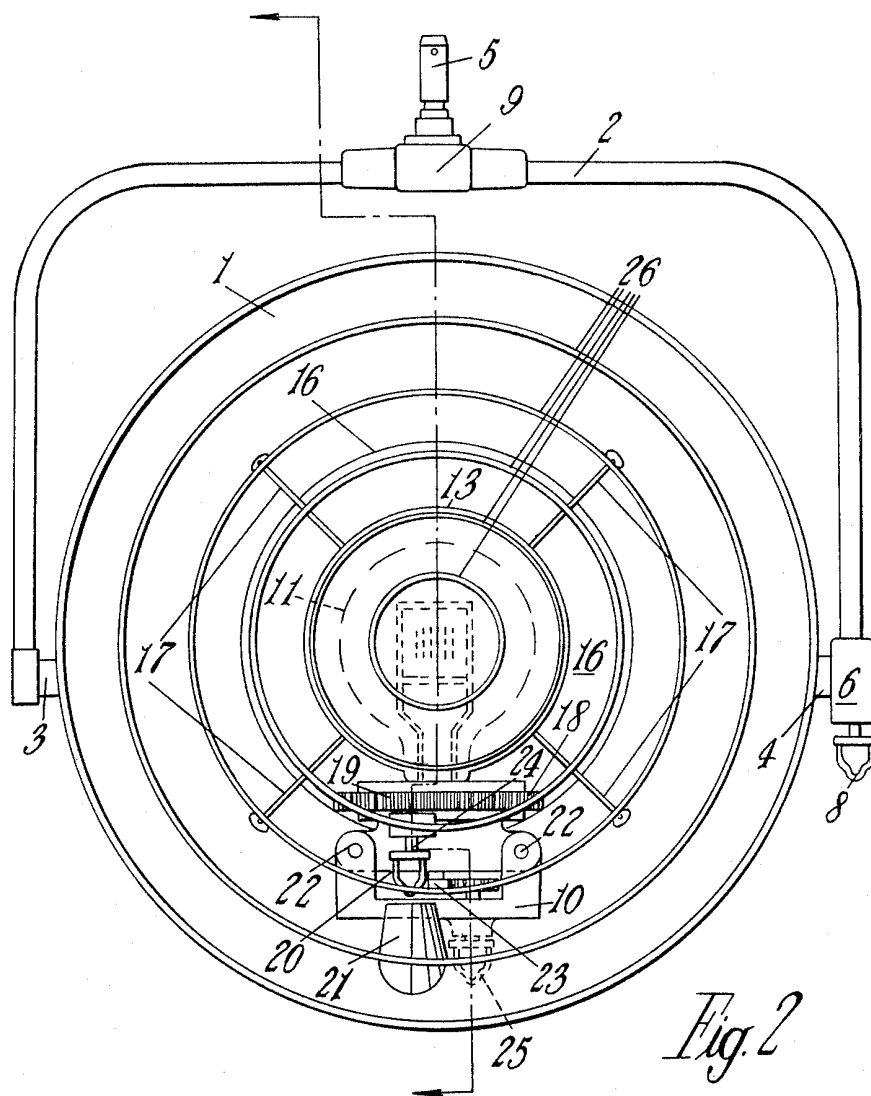


Fig. 2

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4 Sheets-Sheet 3

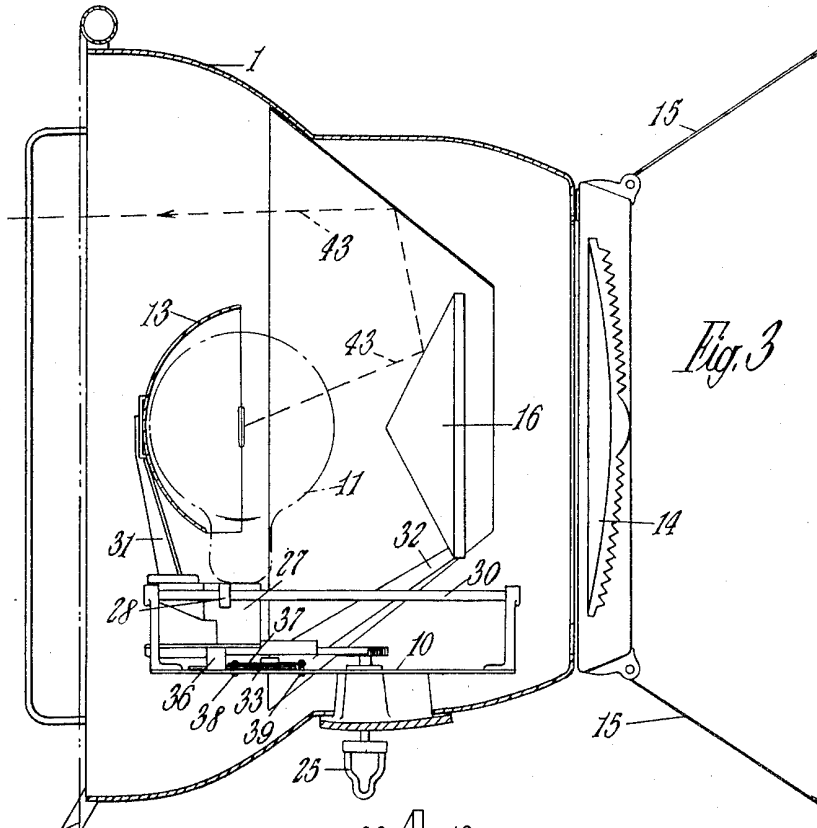


Fig. 3

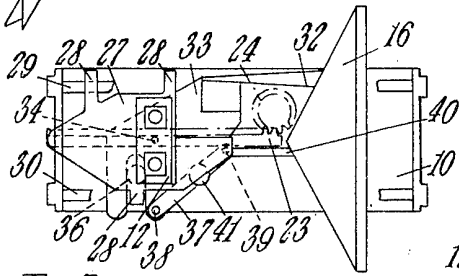


Fig. 5

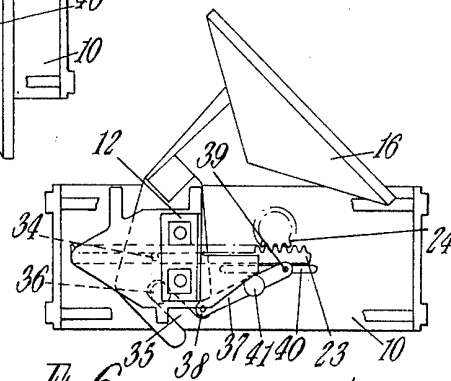


Fig. 6

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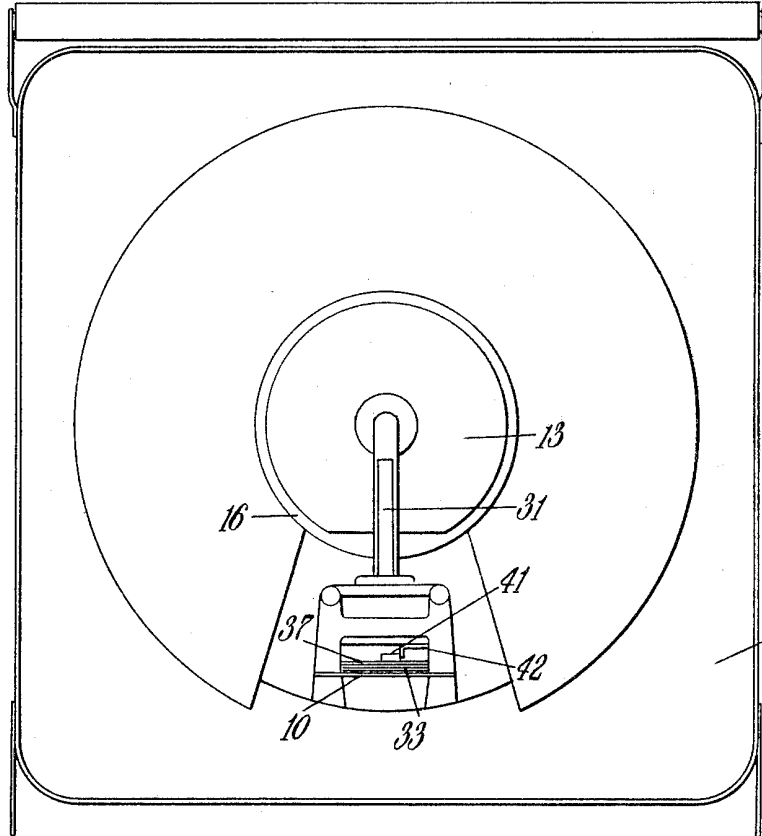


Fig. 4.

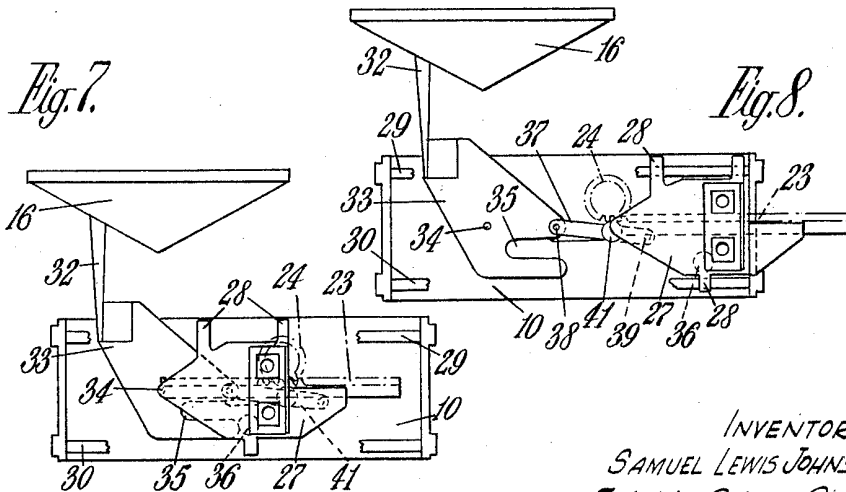


Fig. 7.

Fig. 8.

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TELEVISION AND FILM STUDIO LAMP

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Claims priority, application Great Britain, May 8, 1963, 18,239/63

5 Claims. (Cl. 240—3)

The invention relates to television and film studio lamps particularly but not exclusively of the kind adapted to be supported above and clear of the floor of the studio.

It is modern practice to provide the lamps suspended by telescopic pendant assemblies from grid systems supported in a horizontal plane well above the studio floor and covering the whole of the working space. The grid system may comprise parallel U-shaped metal sections spaced a few inches apart to provide a rail each side of a slot upon which a trolley for each lamp can be run from side to side of the studio. Each trolley carries a hoisting winch for raising and lowering the lamp upon its telescopic pendant assembly.

By providing several trolleys in each slot and a lamp upon each trolley it is possible to cover most arrangements of lighting required. However, in order to economize in the number of lamps provided it is arranged to be able to disconnect the telescopic pendant assembly from its trolley and move it to a trolley in another slot.

The lamps used in television and film studios fall into two main classes, these are flood lamps and spot lamps, the former producing light which comes from a large area and therefore does not cause sharply defined shadows while the latter produce light substantially from a point source and produce relatively sharply defined shadows. Both types of lamp are normally required intermixed and therefore to be able to set up any required lighting effect at any point on the studio floor both types of lamps must be readily available. If, therefore from a previous use a number of spot lamps are suspended upon adjacent trolleys and flood lamps are now required it may be impossible to reposition the lamps required without detaching them from their pendant assemblies and attaching the required type of lamp. This process is inconvenient and absorbs time and labour, but heretofore was unavoidable.

It is the object of the present invention to provide lamps for television and film studio lighting which avoid the disadvantage above referred to.

The invention consists in a studio lamp characterised in being especially adaptable to be used alternatively as a flood lamp or a spot lamp.

The invention further consists in a lamp as set forth in the preceding paragraph having a bowl reflector which is used when the lamp is adapted for use as a flood lamp and a lens for use when the lamp is adapted for use as a spot lamp, and the light from the bowl emerges in a different direction from that by way of the lens.

The invention still further consists in a lamp as set forth in the preceding paragraph in which the bowl and the lens are co-axial and face in opposite directions.

Behind the light bulb or bulbs there may be provided a reflector the position of which is adjustable to adapt the lamp to either of its alternative purposes, while the position of the light bulb or bulbs is variable to focus the spot lamp.

The accompanying drawings show, by way of example only, two embodiments of the invention, in which:

FIGURES 1 and 2 are a vertical section on the axis of a lamp and an elevation of the floodlamp side of the lamp respectively of a first form of construction,

FIGURES 3 and 4 are a vertical section on the axis of a lamp and an elevation of the floodlamp side of the

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lamp respectively of a second form of construction, while FIGURES 5, 6, 7 and 8 are plan views showing the different positions occupied by the conical diffusing bowl and lamp holder in the conversion of the lamp of FIGURES 3 and 4 from floodlamp in FIGURE 5 to spot lamp in FIGURE 8.

The lamp of FIGURES 1 and 2 comprises a bowl reflector 1, which can conveniently be made of aluminium with either a prepared white matt reflecting surface or the metal may be given a matt surface in the manner well known. The bowl is supported in the U-shaped yoke 2 by means of the stub axles 3 and 4, so as to be rotatable both about the spud 5 and about the axes of the axles 4 and thus can be turned to face in any direction.

There is provided a gear box 6 at one end of the yoke containing a worm and worm wheel by means of which the lamp may be tilted by engaging a hooked long arm 7 in the eye 8 when the lamp is suspended out of reach. There is also provided a gear box 9 associated with the spud 5 containing a worm and worm wheel by means of which the yoke 2 can be rotated about the spud 5. A flexible operating cable is housed in one arm of the yoke 2 and is terminated in an eye similar to the eye 8 and just behind it as viewed in FIGURE 2.

A platform 10 is fixed within the reflector 1 which supports the lamp bulb 11 and holder 12 as well as the spherical mirror 13. The rear of the reflector 1 is provided with an aperture and has bolted thereto a support for a Fresnel lens 14 and barn door flaps 15. When the lamp is being used as a flood lamp the lamp bulb 11 and the spherical reflector 13 are in the position shown by the full lines. In this position light from the lamp bulb 11 reflected by the reflector 13 passes forward by way of the sand blasted diffusing bowl 16 suspended on the axis on the reflector 1 by the rods 17, while the direct light from the light bulb 11 is reflected forward by the surface of the bowl reflector 1. By this means adequate control of the angle of projection of light is obtained.

When the lamp is used as a spot lamp, the reflector 13 is moved to the position shown by the chain dotted lines and the lamp bulb and reflector 13 are moved together away from and towards the Fresnel lens 14 to focus the beam emerging therefrom. If necessary the lamp is turned as a whole around the spud 5 to face in the required direction, the cut-off at the edges of the spot being adjusted by means of the barn door flaps 15 in the manner well known.

So that the reflector 13 can be moved into the alternative positions when the lamp is suspended out of direct reach, the reflector 13 is mounted upon a turntable 18 which is either provided with teeth engageable with a toothed pinion 19, as shown, or alternatively can be provided with sprocket teeth engaging a sprocket chain passing around a small sprocket wheel occupying the position of the pinion 19. In either case the axle of the pinion or small sprocket wheel is provided with an eye 20 which can be reached by the hooked long arm 7 by way of the aperture 21 in the base of the reflector 1.

In order that the lamp bulb 11 may be moved towards and away from the reflector 13 thereby to focus the spot light, the turntable 18 is mounted upon slots 22 comprising rods fixed in projections upon the platform 10 and having a rack 23 for engagement with the hooked long arm 7.

Seeing that the eye 20 moves with the turntable while focus is being adjusted, the lamp bulb is to be moved to the position shown by the full lines before the conversion back to flood lamp can be undertaken, otherwise the eye 20 will not register with the aperture 21.

In order to control the width of the beam emerging from the flood lamp the concentric spill rings 26 are positioned in the mouth of the reflector 1 as shown.

In the first embodiment in conversion from spot lamp to flood lamp, the spherical concave mirror 13 is moved around the lamp bulb 11 from between the diffusing bowl and the bulb 11, and the lens 14 and the bulb 11. In the construction about to be described the spherical concave mirror 13 is retained always on the opposite side of the lamp bulb 11 to the lens 14, and the conversion from spot lamp to flood lamp is carried out by the introduction of a diffusing cone between the lens 14 and the lamp bulb 11.

As in the first embodiment, the lamp bulb is withdrawn from the lens when the lamp is used as a flood lamp and is adjustable as to distances from the lens, for the focusing of the spot lamp.

It can be seen from FIGURES 3-8 that the lamp bulb 11 is mounted upon the holder 12 which is housed within a carriage 27, provided with lugs 28 which have bores through which pass the rods 29 and 30. By this means, the lamp is movable towards and away from the lens 14. The movement of the carriage is imparted by the pinion 24 engaging in the rack 23 positioned to the bottom of the carriage 27, the pinion being rotatable by means of a hooked long arm engaged with the eye 8 as for the previously described construction.

The movement of the lamp bulb 11 is not only for the purpose of focusing the spot lamp but is also to move the lamp bulb away from the lens sufficiently for the introduction therebetween of the conically shaped diffusing bowl 16 in converting the lamp from spot lamp to flood lamp.

The lamp bulb is provided with a spherical mirror 13 fixed to the carriage 27 by the bracket 31 and which therefore moves with the lamp bulb 11 and remains always on the same side thereto.

The conical diffusing bowl 16 is mounted by a bracket 32 on a horizontal shaped plate 33 which is rotatable in a horizontal plane about the pin 34 fixed on the platform 10 of the support. By means of this, the conical diffusing bowl is movable over an arcuate path between the position shown in FIGURE 5 to that shown in FIGURES 7 and 8 when converting the lamp from flood lamp to spot lamp and vice-versa.

The shaped plate 33 is provided with a slot 35 which is engageable by a projection 36 from the bottom of the carriage 27 and by which the plate is rotated with longitudinal movement of the carriage 27 as shown in FIGURES 5-7. The final movement, after the projection 36 has left the slot 35 as in FIGURE 7, is given by the link 37 pivoted at one end upon the pin 38 to the plate 33 and is provided with a pin 39 at the other end which engages in a slot 40 in the platform 10. The link 37 has a projection 41 thereon which is engaged by a cam like member 42 on the bottom of the carriage 27 (see FIGURE 4), which pushes the link over to rotate the plate the final amount and besides which the link acts as a toggle which prevents the plate from returning from its final position.

When the carriage moves in the opposite direction by the turning of the eye 25 the projection 36 engages the plate 33 adjusting the slot 35 as in FIGURE 7, and then rotates the plate into the position shown in FIGURE 6 and then FIGURE 7 where the plate becomes immovably locked.

When the diffusing bowl 16 is in front of the lens 14, the direct light from the lamp bulb and the reflected light from the spherical mirror 13 is reflected by the bowl into the diffusing surface of the bowl reflector 1 and passes out to the left, as viewed in FIGURE 3, and represented by the dotted line 43 and arrows, but when the diffusing bowl 16 is moved out of the way into the position shown in FIGURE 8 and the lamp bulb 11 and the spherical mirror 13 have been moved into the appropriate focusing position, the light from the lamp bulb 11 and the mirror 13 emerges by way of the lens 14 as a spot light.

The lamp constructed in accordance with the arrangements shown in FIGURES 3 and 4 can, of course, be provided with a U-shaped yoke and stud axles, and a stud above as provided upon the construction shown in FIGURES 1 and 2, so that the lamp may be hung from above by a telescopic pendant assembly from a grid system.

By the use of a studio lamp constructed in accordance with the invention and adaptable to be used alternatively as a flood lamp or spot lamp the cost of installation is greatly reduced as well as the time required for setting up the lighting prior to "shooting." Particularly is this so when the lamps are suspended on trolleys from a grid system, seeing that any lamp in a slot may be used for either of the alternative purposes and thus avoid having to take down and change them over.

Either form of lamp can alternatively be supported upon a floor stand or in any other manner and still exhibit the advantages of adaptability to its alternative uses, and it is therefore to be understood that the claims are not to be construed as limiting the lamp to any particular method of support. It is also to be understood that the above description is by way of example only and that details for carrying the invention into effect may be varied without departing from the scope of the invention.

I claim:

1. Studio lamp adaptable for use alternatively as a flood lamp or a spot lamp comprising a bowl reflector having an aperture in the back thereof, a lens close to the aperture in the back of the bowl and positioned to transmit light passing out of the bowl by way of the said aperture, a lamp holder for supporting a lamp bulb within the bowl reflector on the axis of the lens, a concave mirror on the opposite side of the bulb to the lens which directs light from the bulb towards the lens, a diffusing bowl and a movable support means for the diffusing bowl, the bowl being movable from a position between the lamp bulb and the lens, which it occupies when the lamp is adapted to be used as a flood lamp, to a position where the passage of light from the concave mirror to the lens is unobstructed thereby, when the lamp is adapted to be used as a spot lamp.

2. Studio lamp adaptable for use alternatively as a flood lamp or a spot lamp comprising a bowl reflector having an aperture in the back thereof, a lens close to the aperture in the back of the bowl and positioned to transmit light passing out of the bowl by way of the said aperture, a lamp holder for supporting a lamp bulb within the bowl reflector on the axis of the lens, a concave mirror on the opposite side of the bulb to the lens which directs light from the bulb towards the lens, a diffusing bowl, a movable support means for the diffusing bowl, by means of which the bowl is movable from a position between a lamp bulb in the lamp holder and the lens, which position it occupies when the lamp is adapted to be used as a flood lamp, to a position where the passage of light from the concave mirror to the lens is unobstructed thereby, when the lamp is adapted to be used as a spot lamp, and a support for the lamp holder which is movable towards and away from the lens to focus the lamp when the lamp is adapted to be used as a spot lamp and to allow a space for the diffusing bowl to be positioned between the lamp bulb and the lens when the lamp is adapted to be used as a flood lamp.

3. Studio lamp as claimed in claim 2 in which the support for the lamp holder is slidable upon a pair of parallel rails towards and away from the lens by rack and pinion means.

4. Studio lamp as claimed in claim 3 in which the movable support means for the diffusing bowl is pivoted upon the support for the lamp holder and is rotated by the engagement of a projection upon the support means for the lamp holder in a slot in the support means for the diffusing bowl.

5. Studio lamp as claimed in claim 3 in which the

pinion is mounted on a shaft having an operating eye for engagement with a hooked long arm.

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⁵ NORTON ANSHER, *Primary Examiner.*