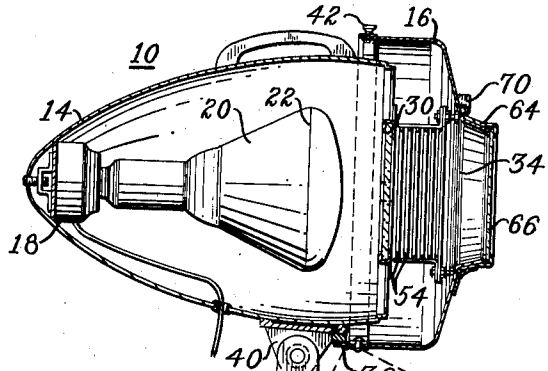
Feb. 17, 1942. H. J. GOERG ET AL 2,273,316

COLOR PROJECTOR

Filed March 27, 1939 2 Sheets-Sheet 1



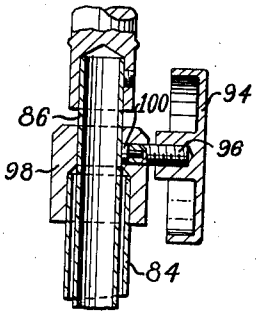




FIG. 4

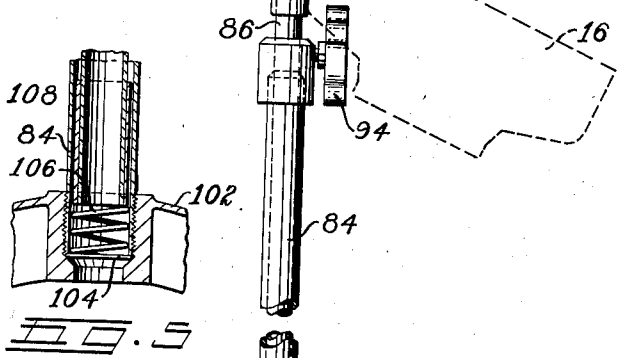



FIG. 5

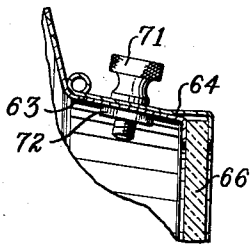



FIG. 6

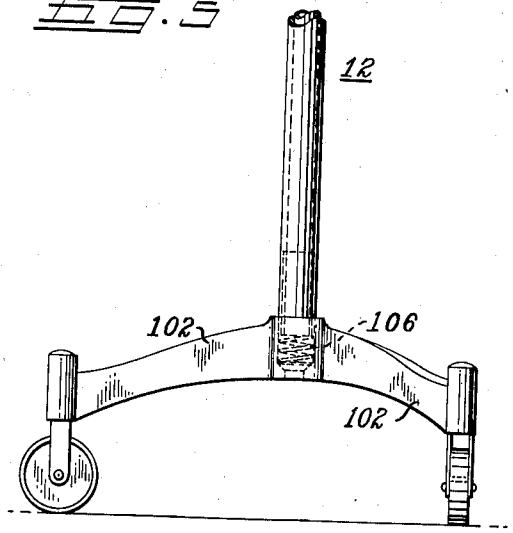



FIG. 1

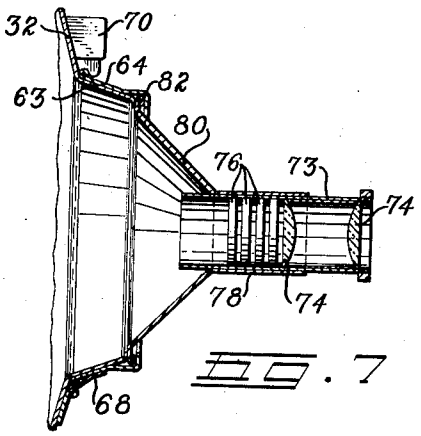



FIG. 7

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COLOR PROJECTOR

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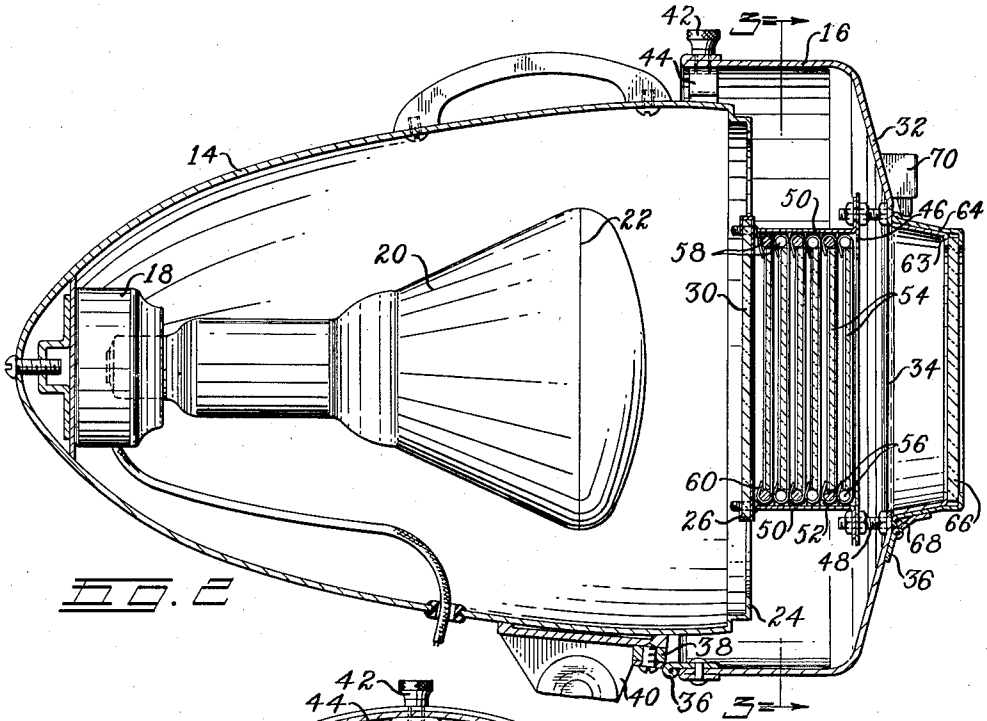



FIG. 2

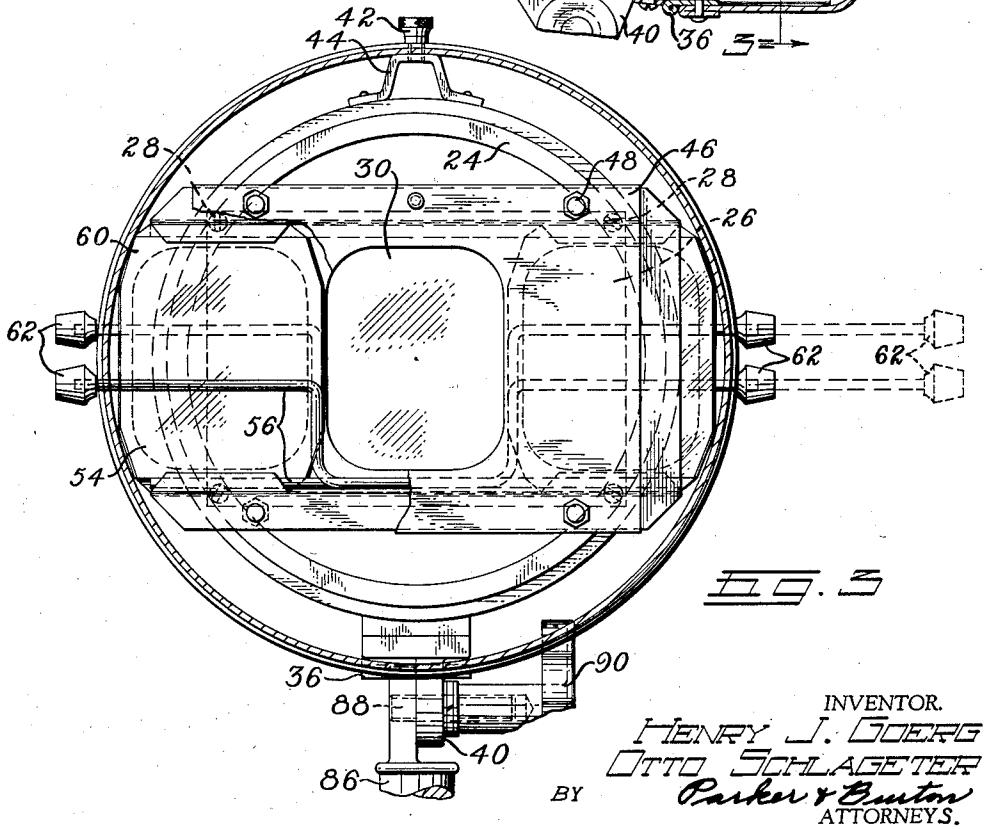



FIG. 3

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# UNITED STATES PATENT OFFICE

2,273,316

## COLOR PROJECTOR

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Application March 27, 1939, Serial No. 264,352

6 Claims. (Cl. 240—1)

This invention relates to a color ray projection apparatus especially adapted for therapeutic purposes.

Waves of visible vibrations have been used to assist in the treatment of various physical and mental disorders and attempts have been made in the past to provide machines which would project color rays of given frequencies for such treatments. These machines were relatively large, complicated and expensive to manufacture. They required electric light sources utilizing considerable wattage and means such as fans and double wall structures were provided in order to carry out or dissipate the heat developed by the light source as quickly as possible. Furthermore, these machines were difficult to gain access to the interior for cleaning or repair, and parts had to be removed from the machine and set aside to accomplish these operations. In addition, there was usually an assortment of removable parts such as color filter glasses and slides which accompanied each machine, and for full use of the machine it was usually necessary to attach and remove the parts in substitution for one another. Lastly, the machines were bulky, heavy and occupied considerable space, making it highly inconvenient for professional use.

An important object of this invention is to provide an improved color wave projection apparatus formed in one compact, light weight machine having all the parts intended for use installed upon the machine. Another important object of the invention is to provide a machine of this character which is economical to operate and capable of satisfactory operation with an electric light source which is relatively low in power consumption and which as a result thereof is low in heat productivity eliminating the necessity of air cooling provisions heretofore found necessary.

A further object of this invention is to provide an improved machine of this character having associated therewith in novel relationship a new form of an incandescent electric light bulb which is so constructed and associated with the machine that it functions by itself to direct a concentrated beam of light through an opening in the machine. A still further object of this invention is to provide an improved construction for this type of machine which includes a cover element having a novel support therein for mounting a plurality of color filter slides for independent movement and so assembled upon the housing in which the source of white light is contained that in operative position it forms a passage on the different sides of the housing for the escape of heat developed during the operation of the machine.

More particularly this invention comprehends a color wave therapeutic device which is supported in a novel adjustable manner from the floor and which is capable of readily providing any one of a number of given colors without requiring any mental calculations or study of diagrams. Associated with the device is a novel form of cover element which is provided with a series of tracks for slidably guiding a plurality of colored filter glasses into and out of the beam of white light issuing from the light source in the housing element. The cover is hinged in a novel manner to the housing element for swinging movement from an operative position overlying the open end of the housing element to an inoperative position at one side of the housing. The cover element is so related to the housing element that in operative position it forms an inconspicuous passage on all sides of the housing for conducting heat away and in inoperative position allows access to both the interior of the housing and the glass filter slides for cleaning purposes.

A novel feature of the invention is the manner of supporting a diffusing glass over the opening in the housing through which the light is projected which allows for the escape of heat thereabout. Another important novel feature of the invention is an attachment for the front of the device capable of condensing the light to a concentrated beam and coloring it for treating local spots or small areas. Another feature is a small closure for the cover hinged to the large previously described cover which can be opened and closed separate from the larger cover for cleaning purposes or otherwise.

Various other objects, advantages and meritorious features of this invention will become more fully apparent from the following specification, appended claims and accompanying drawings, wherein:

Figure 1 is a view of one embodiment of the invention including the upright stand therefor and the light projecting device partially broken away to show the interior construction,

Fig. 2 is a larger vertical cross-sectional view of the light projecting devices,

Fig. 3 is a vertical cross-sectional view of the device along line 3—3 of Fig. 2,

Fig. 4 is a detail cross-sectional view of a part of the upright standard,

Fig. 5 is a detail view of a part of the standard

showing the manner of cushioning the light projecting devices against the shocks in use,

Fig. 6 is a detail view showing the manner of connecting a smaller auxiliary cover to the larger cover enclosing the opening of the housing, and

Fig. 7 is a detail cross-sectional view illustrating an attachment for the light projecting devices and the manner of connecting the same to the front of the devices.

The embodiment of the invention illustrated in the drawings comprises the device generally indicated at **10** which throws the desired colored beam of light and an upright support therefor generally indicated at **12**. The device **10** comprises the main housing or shell **14** having as shown in Figure 1 a generally circular configuration tapering from an enlarged open end to a closed relatively pointed end. Over the enlarged open end there is adapted to be secured a cover element **16** which will be described more fully hereinafter. Both the shell element **14** and the cover element **16** are formed of sheet steel die stamped into the formation shown. This provides a strong, light-weight structure comparing favorably with the bulky cast metal structures heretofore used for devices of this character.

An electric light bulb socket **18** is supported in the closed pointed end of the shell **14** and is arranged as shown so that it faces outwardly toward the enlarged open end of the shell. Secured in this socket on the axis of this shell is an electric light bulb of novel construction. This bulb has a narrow neck adjacent the socket engaging end and an outwardly flaring portion terminating adjacent the open end of the shell and being of a diameter at this latter point approximately equal to one-half the diameter of the shell at this point. The neck portion and the outwardly flaring portion are composed of light reflective material which acts to concentrate the light rays emitted by the filament of the bulb and direct these rays out of the end of the bulb toward the open end of the shell. The balance of the bulb on the outer end thereof is composed of light permeable glass. The line **22** on the bulb indicates the frone edge of the light reflecting portions referred to above.

The open end of the shell is provided with a radially inwardly extending flange **24**. Across this opening and secured to the radial flange is a rectangular frame **26**. Round head screws **28** at the corners of the frame detachably secure it to the radial flange as shown in Figures 2 and 3. The frame is shaped to support a light diffusing glass **30** in the center of the open end of the shell. It should be appreciated that the rectangular frame and the glass carried thereby do not completely cover the opening in the shell but instead provide considerable space between the top, bottom and side edges of the frame and the radial flange and forms passages which as will be pointed out more fully hereinafter serve to conduct heat developed during the functioning of the device.

The circular side portion of the cover **16** is of larger diameter than the outside diameter of the open end of the shell. The cover is provided with a front face **32** having an aperture or hole **34** therein which, when the cover encloses the end of the shell as shown in Figure 1 is concentric with the larger open end of the shell. The cover element is attached to the shell **14** in a novel way for movement so that ready access may be easily gained to the interior of the shell and also to the interior of the cover. As shown in the detail views in Figures 2 and 3, a hinge **36** is provided for swingably connecting the cover element to the bottom side of the shell and enabling the cover to be swung from its closed operative position shown in full lines in Figure 1 to its open inoperative position on one side of the shell as shown in dotted outline in Figure 1.

Actually as shown in Figures 1 and 2 the hinge is secured to the shell through the intermediary of a lip or lug **38** on the shell supporting member **40**. The construction and assembly of these parts is such that when the cover **16** is swung to closed operative position its circular side portion partially overlaps upon the open end of the shell in slightly spaced relationship thereto on all sides of the shell. This provides an annular passage around the shell which cooperates with the spaces previously described in connection with the diffusing glass frame **26** to form an exit for the heat developed by the electric bulb during the operation of the machine. The oversize character of the cover **16** blends harmoniously with the shape of the shell **14** and at the same time provides an inconspicuous passage for the conduction of heat. If desired, small holes may be punched through the wall of the shell at certain places to assist in the exit of heat from the casing. The cover **16** is releasably held in closed operative position by a knurled thumb screw **42** extending through the top portion of the cover and threaded in a brace member **44** secured to the top of the shell body **14**.

The cover element **16** supports in a novel manner a plurality of glass colored filter slides for independent shiftable movement by separate outside control means. Being thus supported in the cover, the color filter slides move with the cover when the latter is swung downwardly to its open position thus enabling the operator to quickly gain access either to the slides or to the interior of the shell.

Referring in detail to Figures 2 and 3, a frame member **46** is secured by bolts **48** to the front face portion **32** of the cover. The bolts **48** extend through the top and bottom sides of the frame member and also support on their inner ends a pair of horizontally extending parallel members **50—50** forming the top and bottom parts of a horizontal runway extending diametrically across the cover. Fixed to these parts at equally spaced points are several channel shaped elements **52**. These elements as shown in Figure 2 are disposed in parallel alignment on the inside surfaces of the members **50—50**. The outer edges of these channel shaped elements serve as guides or rails for the filter glass slides. Slidable on each guide or rail **52** is a color filter slide formed of a piece of glass **54** or any other kind of color transmitter especially made to pass only light of a given wave vibration, a control rod **56** extending along the bottom edge of the glass, a top rod **58** extending along the top edge of the glass, and a metal frame **60** having its top and bottom edges folded over the rods and locking the same and the glass in place. The metal frame of each slide is provided with a large central opening across which the filter glass **54** extends.

The control rods **56** are formed in a particularly novel manner to facilitate operation of the slides and to indicate to the operator the color character of the slides. Each filter slide surmounts the end of the control rod **56** with which it is associated. Each control rod **56** projects as shown in Figure 3 in a straight line from the

bottom edge of the slide with which it is associated for a distance approximately equal to the width of the slide and is then bent upwardly until it is approximately on a level with the horizontal diameter of the cover at which point it is again bent and extends on out through a hole provided in the side portion of the cover. The control rods are shiftable lengthwise as indicated by the dotted lines in Figure 3 and when pulled out to their dotted position cause the filtered slide carried thereby to be shifted to the center of the cover in axial alignment with the shell 14 and the diffusing glass 30. Thus in operative position each slide intercepts the beam of white light from the bulb 20 and imposes its own color characteristic on the beam, and in inoperative position the slide assumes a position to one side of the cover out of the way of the light beam emitted by the bulb.

As shown, certain of the control rods project from one side of the cover 16 and the remainder from the opposite side. Control knobs 62 are fixed to the outer ends of each control rod and they are preferably colored to correspond to the color of the light filtered through the glass 54 controlled by the rod. The bent character of each rod 56 not only serves to bring its control knob 62 into a position substantially on the horizontal diameter of the cover but also as an abutment limiting the distance the rod may be pulled out and automatically serving to position the filtered glass 54 in centered position. It is readily apparent from Figure 3 that when the rods are pulled out to their dotted position the bend in each control rod will abut the side of the cover and automatically limit further travel of the slide as above described.

Although the control rods 56 are shown in the drawings in their preferred construction it is possible, for example, to do away with the bend in the rod and allow the rods to extend straight from the bottom of the slides out through the sides of the shell. This form of construction, however, disposes the control knob 62 a little low on the side of the cover and loses the advantage provided by the jogs in the rods of automatically presetting the filtering glasses in centered condition. Also it is possible to extend the top rods 58 in the same manner as the bottom control rods 56 and connecting them to the latter at the point where they are bent downwardly. Such a mode of construction will dispose the rods into a form of a rectangular frame with the glass filtered slide in the outer half sections thereof.

The front face 32 of the cover is shaped with a projecting circular rim portion 63 encircling the hole 34. A small auxiliary closure or cover is adapted to fit over the rim. It is composed of a metal ring or collar 64 slidingly fitting the outside of the rim and a glass disc 66 extending over the hole 34. The front marginal edges of the rim and collar are flanged radially to form a circular seat for the glass disc. Like the cover element 16 heretofore described, the auxiliary cover is hinged to the machine in order that it may be swung to an open position to allow access to the interior. As shown, a hinge 68 swingably connects the collar 64 to the bottom side of the rim. A spring urged detent 70 is adapted to engage the top of the ring 64 and releasably lock the auxiliary cover in closed position. Instead of a hinge 68 and a spring pressed detent 70, the collar 64 might be more permanently but removably secured to the rim 63 of the cover element 16 by knurled headed bolts 71 in the manner illustrated in Figure 6. The bolts are preferably arranged on the sides of the collar and extend through to the inside of the rim 63 where nuts 72 threaded thereto will secure the parts together.

As previously mentioned, a novel form of attachment is provided for treating small or local spots. This attachment is shown in Figure 7. It comprises a tubular section 73 having therein a pair of optical lenses 74—74 arranged to condense the light passing therethrough into a narrow beam and a plurality of spaced light transmitters 76 adapted to color the light in a manner best suitable for treating the area in question. These transmitters and lenses are spaced from one another by a suitable form of spacers such as the ring members indicated in the drawings. The tubular section 73 is fitted within a sleeve 78 which has an outwardly flaring portion 80 ending in a rolled over marginal bead 82. This bead is of the same dimension as the circular seat formed for the glass disc 66 and when the latter is removed from its seat is capable of occupying the same space between the radial flanges on the rim 63 and ring 64. Thus the attachment can be snugly fitted to the auxiliary cover and may be swung therewith from an operative position in alignment with the axis of the shell to an inoperative position below the hole 34.

The upright support for the color wave projecting device 10 comprises a fixed tubular member 84 telescopingly receiving therein a smaller tubular member 86 to which the device or head 10 is attached. The device 10 is preferably pivoted to the upper end of the member 86 about a pin 88 in the manner illustrated in Figure 3. As shown, the pin 88 is fixed to the upper end of the member 86 and carries a handle 90 threaded thereto which frictionally clamps the shell supporting member 40 to the top of the member 86. The tilt of the device 10 is easily regulated by loosening the handle 90 and then tightening to hold the device in adjusted position.

The color projecting device 10 may be raised and lowered and held at any desired height in its range of movement by the hand operated mechanism illustrated in Figure 4. This mechanism comprises a handle 94 fixed to an operating stem 96 threaded in a bushing 98 secured to the top of the fixed tubular member 84. The stem carries an element 100 on the inner end thereof which is adapted to frictionally engage the tubular member 86 and hold the tubular member at the adjusted height.

In order to prevent damage to the parts in the event the telescoping member 86 should drop at a rapid rate through tubular member 84, the apparatus is provided with novel means to snub the fall. Referring to Figure 5, the bottom end of the outer tubular member 84 is threaded in the center of a floor support formed of radiating legs 102. The bottom opening of the tubular member is closed by a disc 104 which serves as a seat for a coiled spring 106. The bottom end section of the movable tubular member 86 is encased in a sleeve 108 which terminates coextensive with the bottom end of the former providing a bottom edge sufficiently wide enough to serve as a seat for the spring. It is apparent that if the device 10 is raised and then unintentionally let go the coiled spring 106 will act as a shock absorber cushioning the downward movement of the parts as it stops them before the bottom end of the

movable tubular member 86 abuts the fixed disc 104.

In use, the electric light bulb 20 is turned on and by virtue of the built-in reflecting portions of the bulb the white light emitted therefrom is directed through the diffusing filter glass 30 and the front protective glass 66. To color the light beam the desired frequency, one or more color filter slides 54 are slid across the beam by pulling out the control knob 62 to the dotted positions indicated in Figure 3. These knobs, as previously explained are colored the same as the color of light filtered through their respective slides. During the operation of the apparatus, the heat created by the light bulb is conveyed out of the machine through the annular opening formed between the shell 14 and the front cover 16.

The construction and arrangement of the electric light bulb is of special importance. By having portions of the glass bulb itself composed of light reflective material it is possible to eliminate the provision of any reflective surface in the interior of shell 14. The securement of the bulb to a socket in the tapered end of the shell 14 predisposes a bulb of this character in alignment to direct its rays through the opened end of the shell. The bulb and its arrangement in the shell creates less heat than in apparatus of this kind heretofore and as a result eliminates the need of cooling systems such as water jackets or fans as heretofore.

If it is desired to gain access to the interior of the apparatus for cleaning the parts or to substitute a light bulb, the thumb screw 42 is loosened and the front cover is swung open to a position such as that represented by the dotted lines in Figure 1. In this manner, the operator can quickly reach parts in the shell 14 and in the cover element 16. The filter slides carried in the latter are easily reached in this manner to clean them.

At any time the small cover formed by the collar 64 and glass 66 may be opened in a similar manner for cleaning purposes. When opened, the glass 66 may be removed and the attachment shown in Figure 7 substituted. The beaded edge 82 of this attachment will be engaged like the glass 66 between the circular flanges formed by the rim 63 and the collar 64.

What we claim:

1. A color wave projection apparatus comprising, in combination, a shell having a light source therein arranged to direct the rays of light issuing from the light source through an opening in the shell, a hood of a size to cover the opening in the shell, means in said hood forming a series of parallel tracks extending from one side of the opening in the shell to the other, a color wave filter slide mounted on each track and capable of shiftable movement from a position centered in front of the opening in the shell to a position to one side of the center of the opening, a rod attached to each slide for shifting the same and extending through the wall of the hood to the outside, and a knob attached to the outer end of each rod and colored to correspond to the color of the filter slide to which the rod is attached.

2. A color wave projection lamp comprising, in combination, an elongated circular shaped shell opened at one end and closed at the other end, a source of white light inside said shell arranged to direct the rays of light emanating therefrom through said open end of the shell, a cover of larger diameter than the open end of the shell having a marginal portion thereof overlapping the open end of the shell in radially slightly spaced relationship and provided with a front face spaced from the open end of the shell having an aperture therein in alignment with the open end of the shell, means hinging the cover to the bottom side of the shell and adapted to permit the cover to swing downwardly away from the open end of the shell, means on the top side of the shell for releasably holding the cover in front of the open end of the shell, a series of tracks for color filter slides disposed in parallel alignment and extending horizontally across the cover from one side of the open end of the shell to the other side, a color filter slide mounted on each track for movement from a position centered in front of the open end of the shell to a position to one side thereof, a rod attached to each slide and extending through the side of said cover to the outside, and a knob on each rod colored according to the color of light filtered through the slide to which the rod is attached.

3. A color wave projection lamp comprising, in combination, an elongated shell circularly shaped at one end having an opening therethrough and closed at the other end, a source of white light arranged in said shell in such a manner as to direct the light rays emanating therefrom through the open end of the shell, a cover for the open end of the shell having a circular portion of greater diameter than the open end of the shell and a front face portion provided with an opening therethrough, means hinging the cover to the bottom side of the shell so that it may be swung from an operating position concentric with the end of the shell with the circular portion partially overlapping the open end of the shell in spaced relationship to an inoperative position below the shell, means for releasably holding the cover in operative position, a diffusing glass supported by the shell across the opening in the end thereof, an annular member adapted to fit over the opening in the front portion of the cover and carrying a glass transmitting any ray of color passed therethrough from the white source of light in the shell, means hinging said annular member to the cover for movement similar to the cover relative to the shell, a series of horizontal tracks for color filter slides arranged in parallel side by side relationship in said cover and extending from across the center of the opening in the shell to one side thereof, a color filter mounted on each track for movement to a position in the center of the opening in the shell where it intercepts the rays of light issuing therefrom to a position to one side thereof, a control rod attached to each slide extending through the side of the cover, certain of said rods for said slides extending from one side of the cover and the remainder of said rods extending from the other side of the cover.

4. A color wave projection apparatus comprising, in combination, a shell having a light source therein arranged to direct the rays of light issuing from the light source through an opening in the shell, a member forming a cover for the opening in the shell, means in said member forming a series of tracks extending from one side of the opening in the shell to the other, a color wave filter slide mounted on each track and capable of shiftable movement from a position centered in front of the opening in the shell to a position to one side of the center of the opening, a rod attached to each slide for shifting the same and extending through the wall of the cover to the outside, each rod being bent to form

a shoulder, and means within said cover against which the shoulder of each rod abuts to center the slide in front of the opening in the shell.

5. A color wave projection apparatus comprising, in combination, an elongated shell substantially closed except for an opening in one end thereof, a source of white light in said shell arranged to direct the ray of light emanating therefrom through the central portion of the opening in the shell, a frame mounted across said opening carrying a light diffusing glass member through which the rays of light pass, said frame extending in spaced relation to the shell on several sides of the diffusing member to form passages for the escape of heat developed by the source of light, a cover for the opened end of the shell, means hinging the cover to the shell for movement from a position overlying the opened end of the shell to a position to one side thereof, means for releasably holding the cover in position overlying the shell but in spaced relation thereto to form passages for the escape of heat, means in said cover forming a series of tracks extending from one side of the central portion of said opening to a position in line therewith, a color wave filter slide of a size substantially that of the light diffusing member mounted on each track and capable of shiftable movement from a position to one side of said central portion of the opening to a position in line with the diffusing glass member to receive the light passing therethrough, and a rod attached to each slide and extending through a wall in the cover to the outside for independently shifting each slide.

6. A color wave projection lamp comprising, in combination, an elongated shell substantially closed except for one opening in one end thereof, a source of white light in said shell arranged to direct the rays emanating therefrom out through the opening in the shell, a cover for the opened end of the shell, means for removably positioning said cover on the open end of the shell, means in said cover forming a plurality of tracks each extending from one side of the cover to a position in line with the center thereof, a color filter slide mounted on each track and being relatively small in size as compared with the size of the cover so that it may be shifted from an inoperative position on one side of the cover to an operating position in the center thereof, an operating rod attached to each slide and extending to the outside of the cover for independently shifting the slide, said slides disposed in inoperative position on one side of the cover and their respective operating rods extending to the outside from the opposite side of the cover so that upon pulling each rod out its respective slide can be brought into operating position in the center of the cover.

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