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Belliveau et al.

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[54] **LIGHTING SYSTEM WITH MULTIPLE BEAM SHAPES**

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[51] **Int. Cl.**[6] **F21V 5/04**

[52] **U.S. Cl.** **362/268**; 362/283; 362/293; 362/294; 362/331; 362/332; 359/234; 359/621

[58] **Field of Search** 353/84, 88, 97; 359/234, 235, 619, 621, 624, 628, 668–671; 362/281, 283, 331, 284, 268, 293, 294, 332; 40/560

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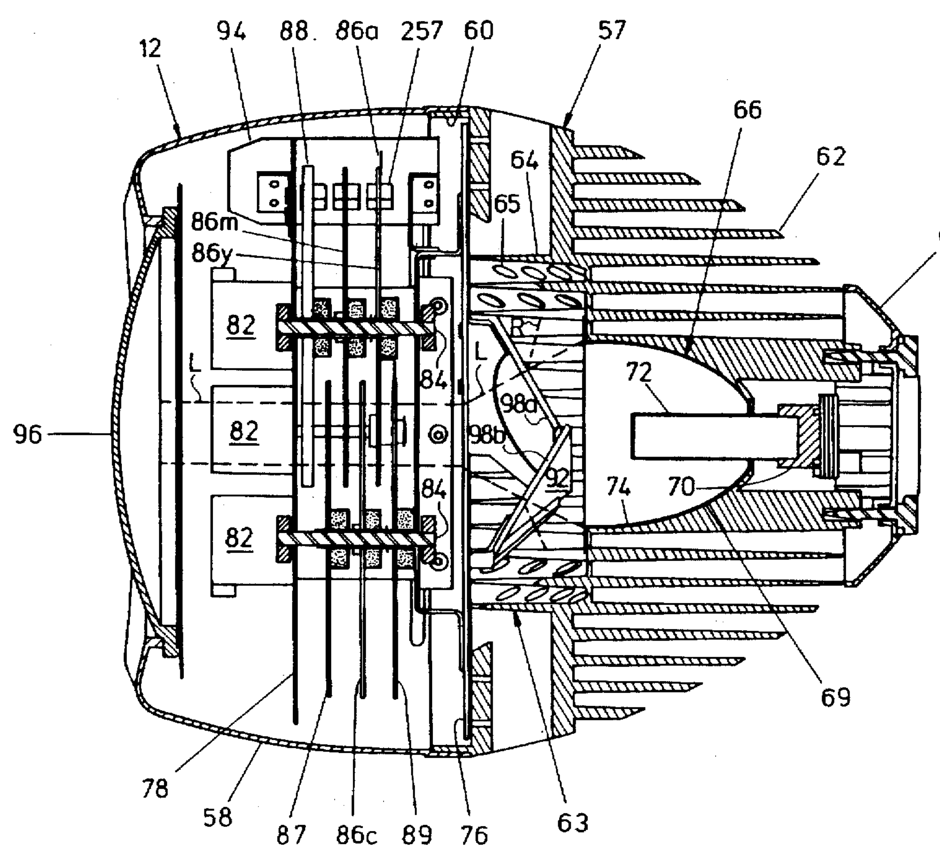
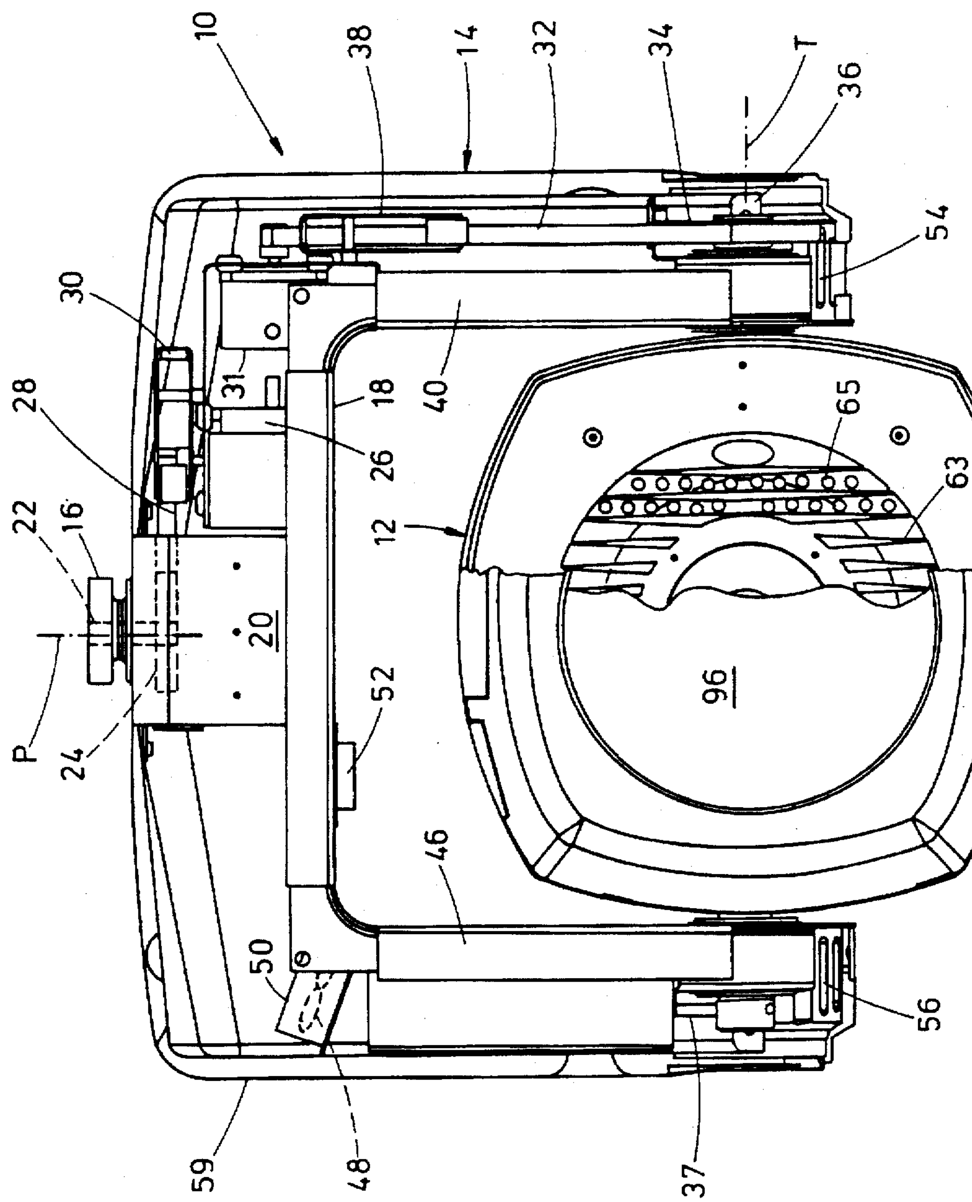
Primary Examiner—Alan Cariaso

[57] **ABSTRACT**

Overlapping lenses for use in a light fixture provided to project a beam of light in a first beam shape having a first cross-sectional geometry. A first lens device is supported in the fixture and movable into a position to interrupt the beam of light for selecting beam shape by altering the first projected beam shape from the first cross-sectional geometry to a second cross-sectional geometry different from the first geometry. The first lens device includes at least one lenticular lens element having lenticules oriented in a first direction. A second lens device, separate from the first device, is supported in the fixture and movable into a position to interrupt the beam of light for selecting beam shape by altering the second projected beam shape from the second cross-sectional geometry to a third cross-sectional geometry different from the first and second geometries. The second lens device includes another lenticular lens element overlapping the one lenticular lens element of the first lens device and has lenticules oriented in a second direction, different from the first direction. The lens elements may be carried by discs rotatably mounted in the fixture. Each disc may carry a plurality of lens elements which can be combined by overlapping to change beam angle and beam shape.

12 Claims, 12 Drawing Sheets

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96
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P
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46
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FIG. 1

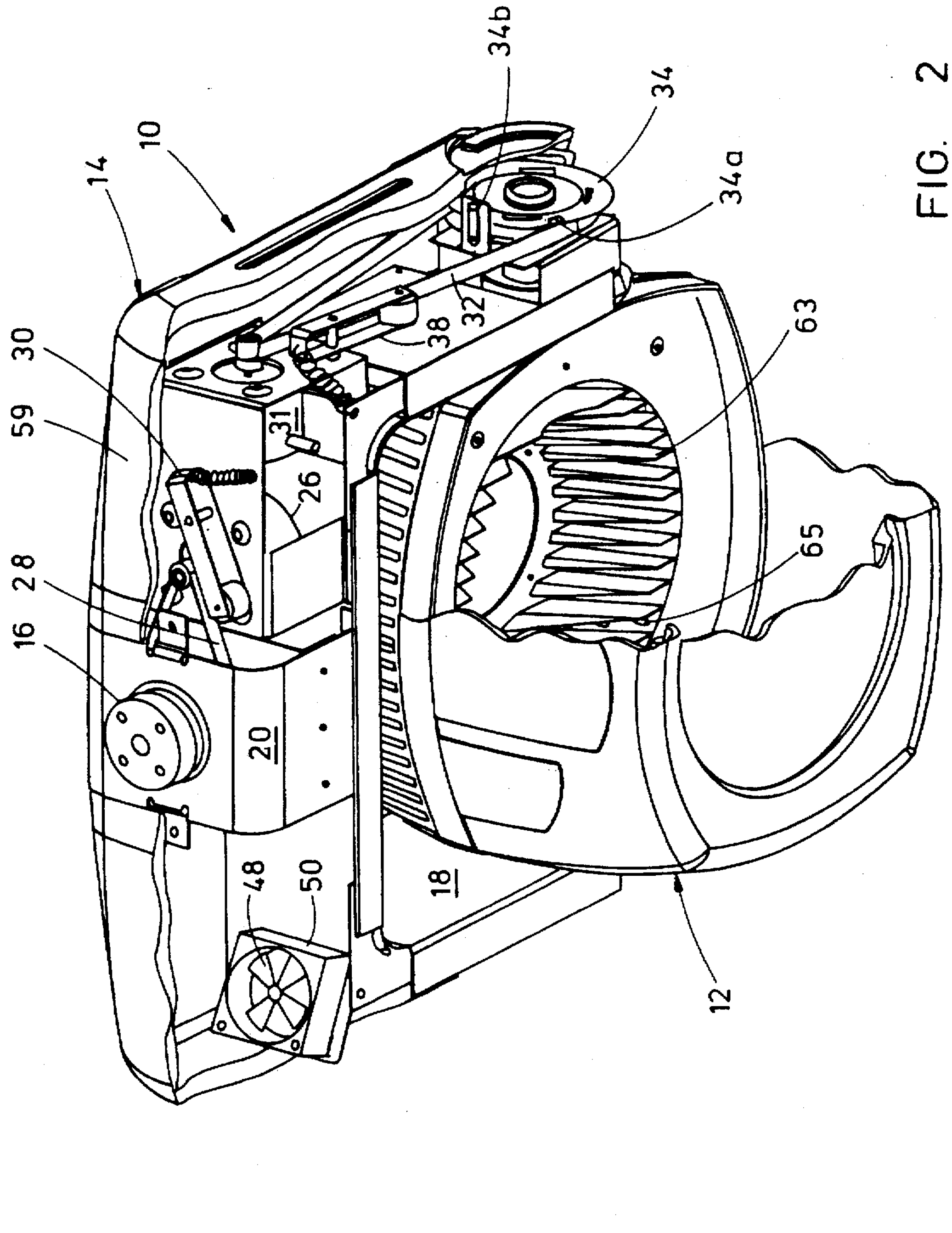
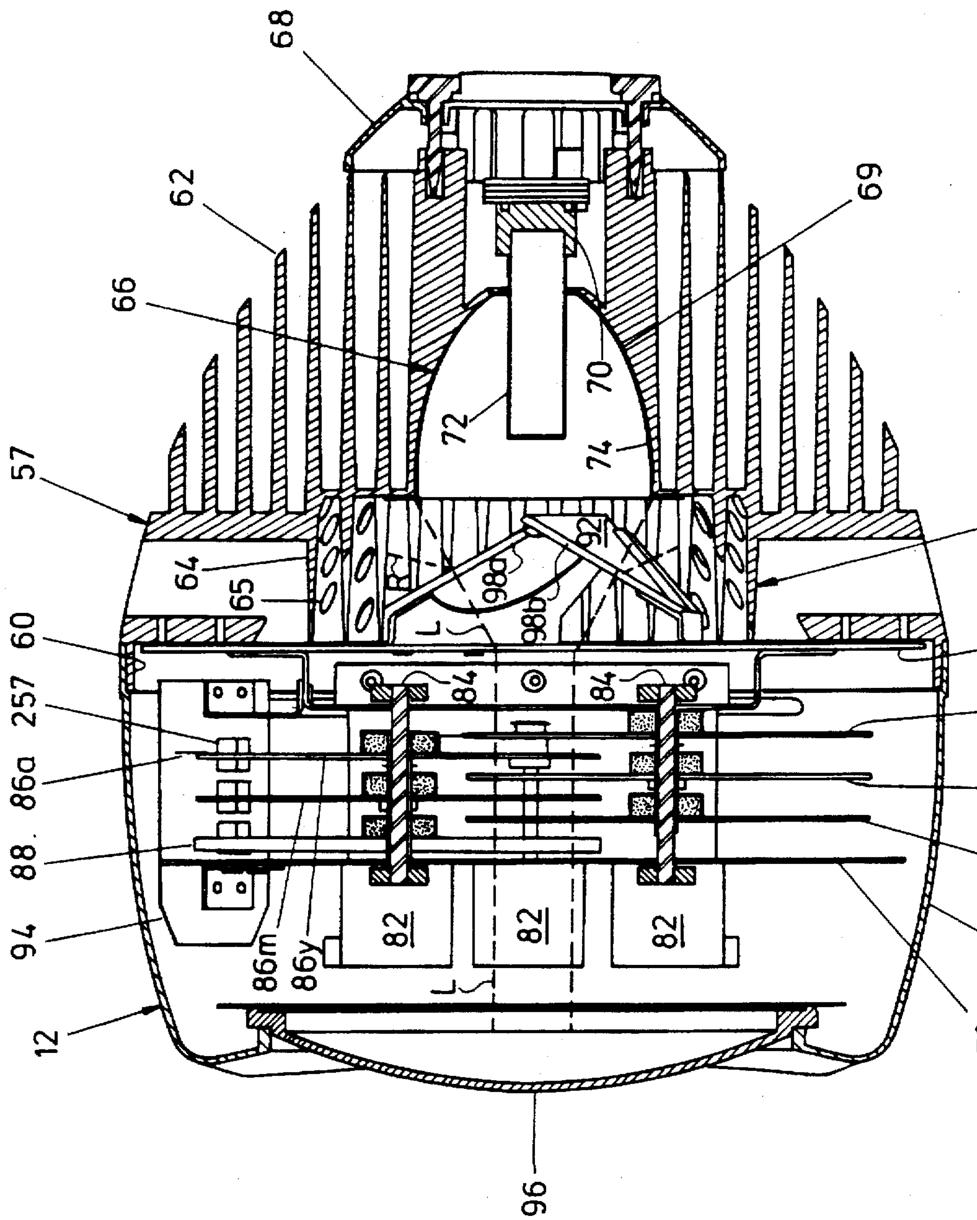


FIG. 2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62
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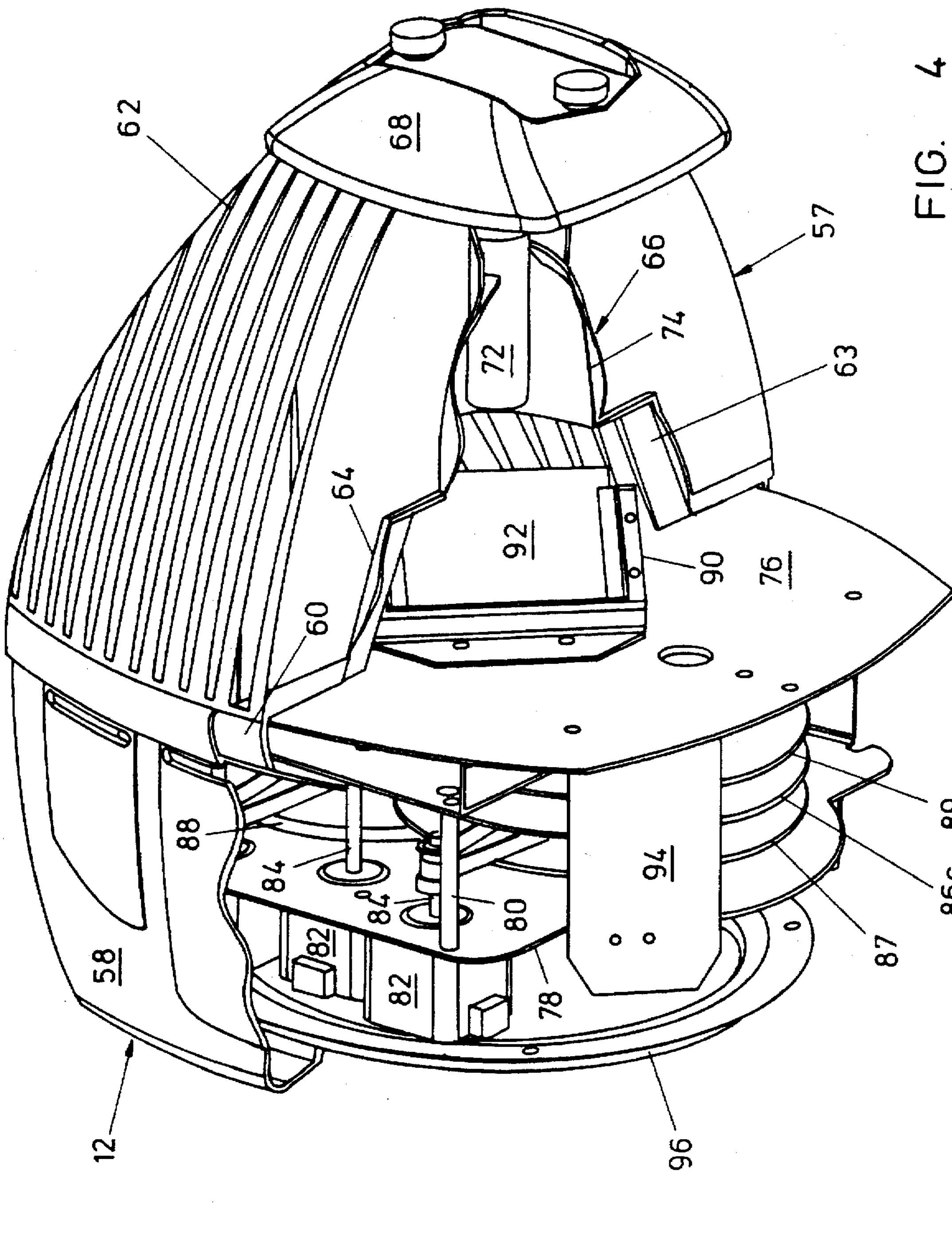
66
70
72
74
57
63
64
65
92
98a
98b
L
60
76
84
84
257
89
86a
86c
88
87
94
82
82
82
86m
86y
58
12
78
96

FIG. 3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63
64
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86c
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78
58
12
96

FIG. 4

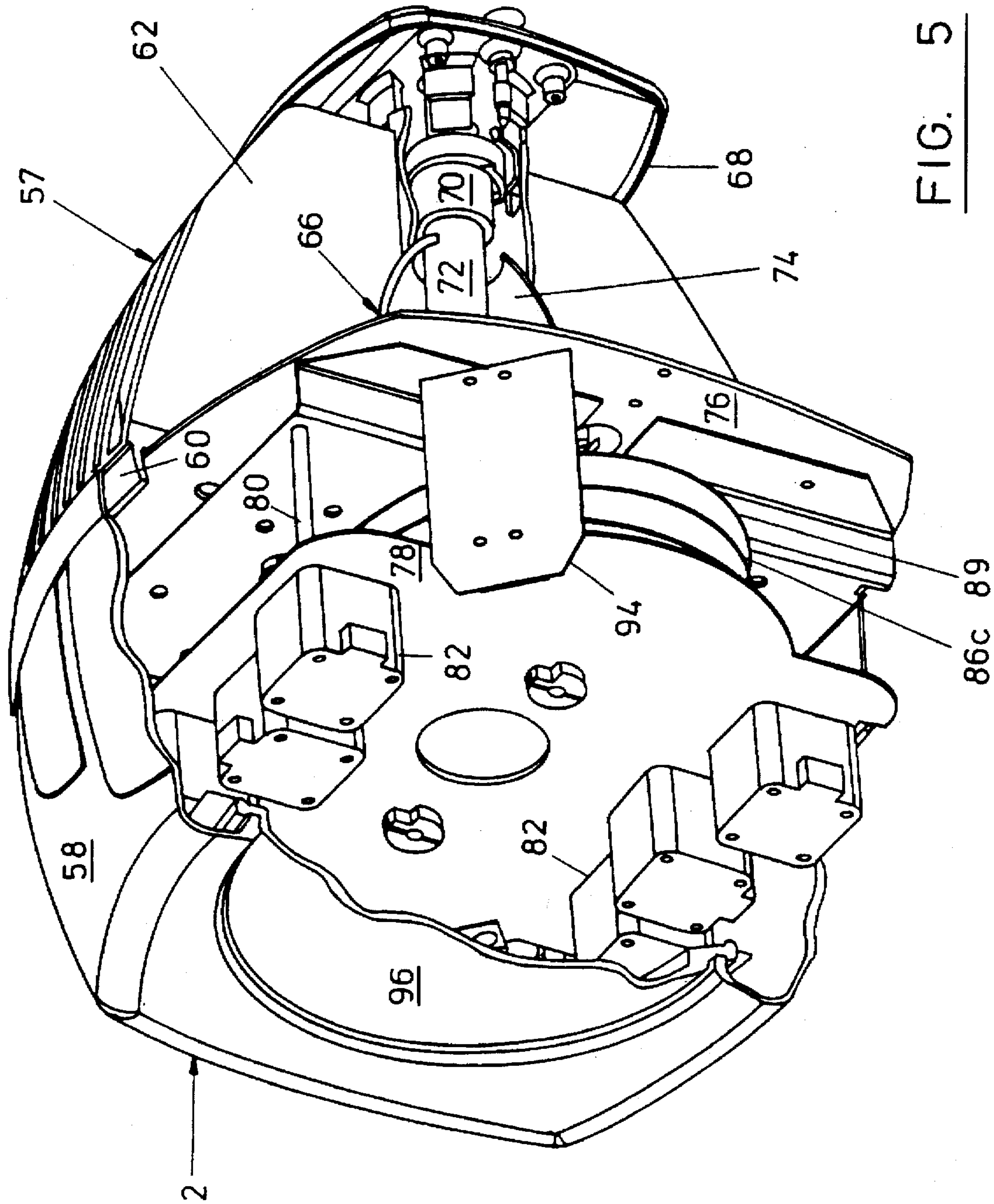

FIG. 5

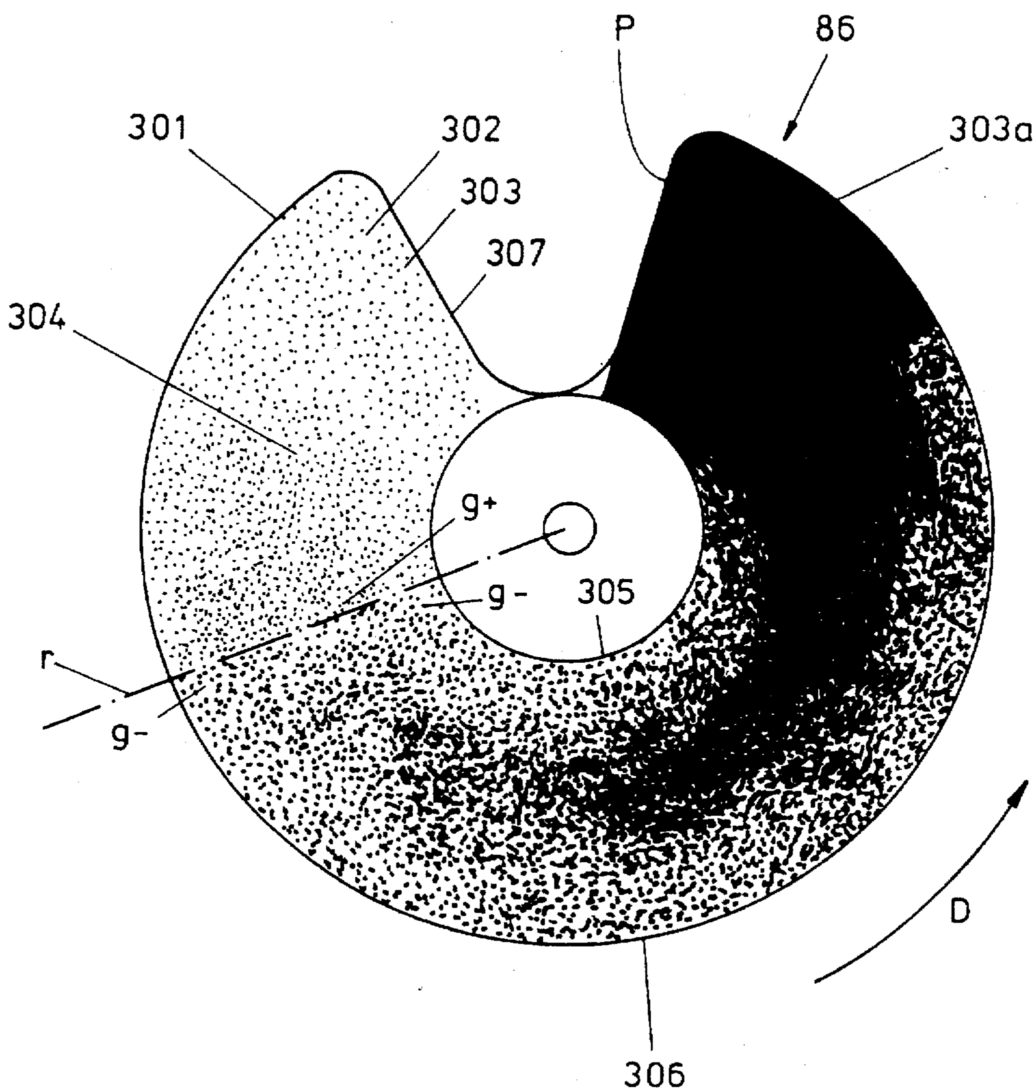

FIG. 6

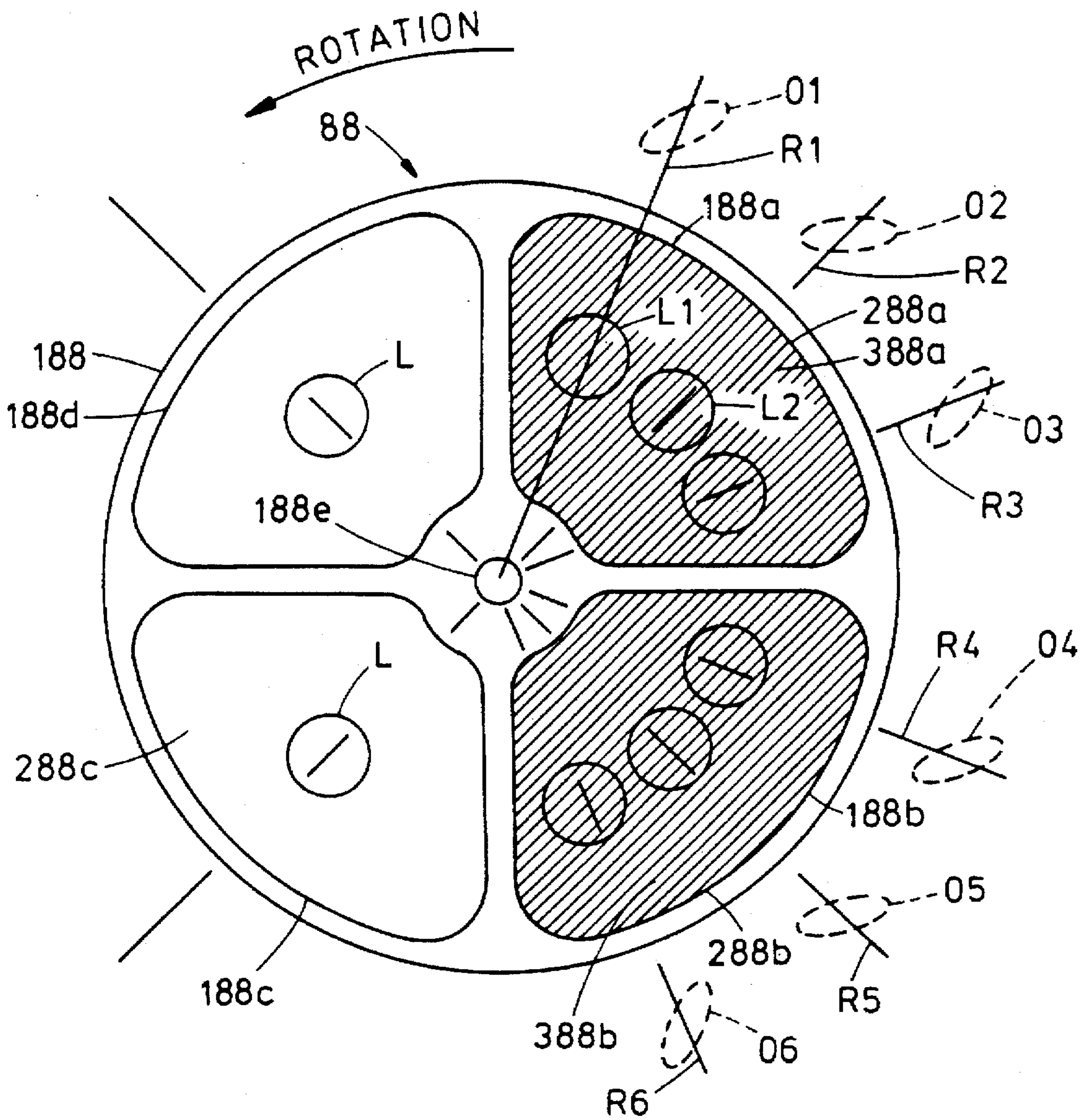
ROTATION
88
01
R1
188a
02
R2
L1
288a
388a
188
L
L2
03
188d
R3
188e
R4
04
L
288c
188b
05
288b
R5
188c
388b
06
R6

FIG. 7A

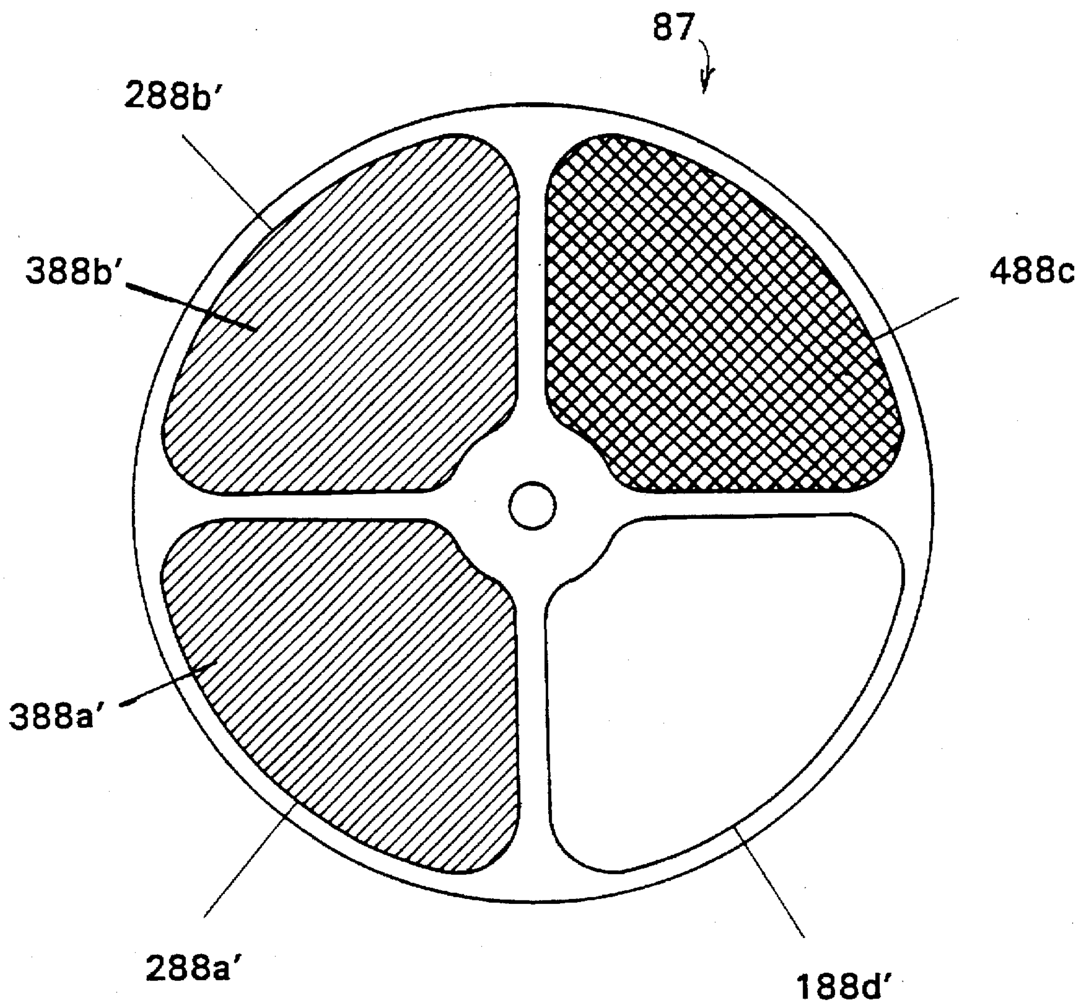

FIG. 7B

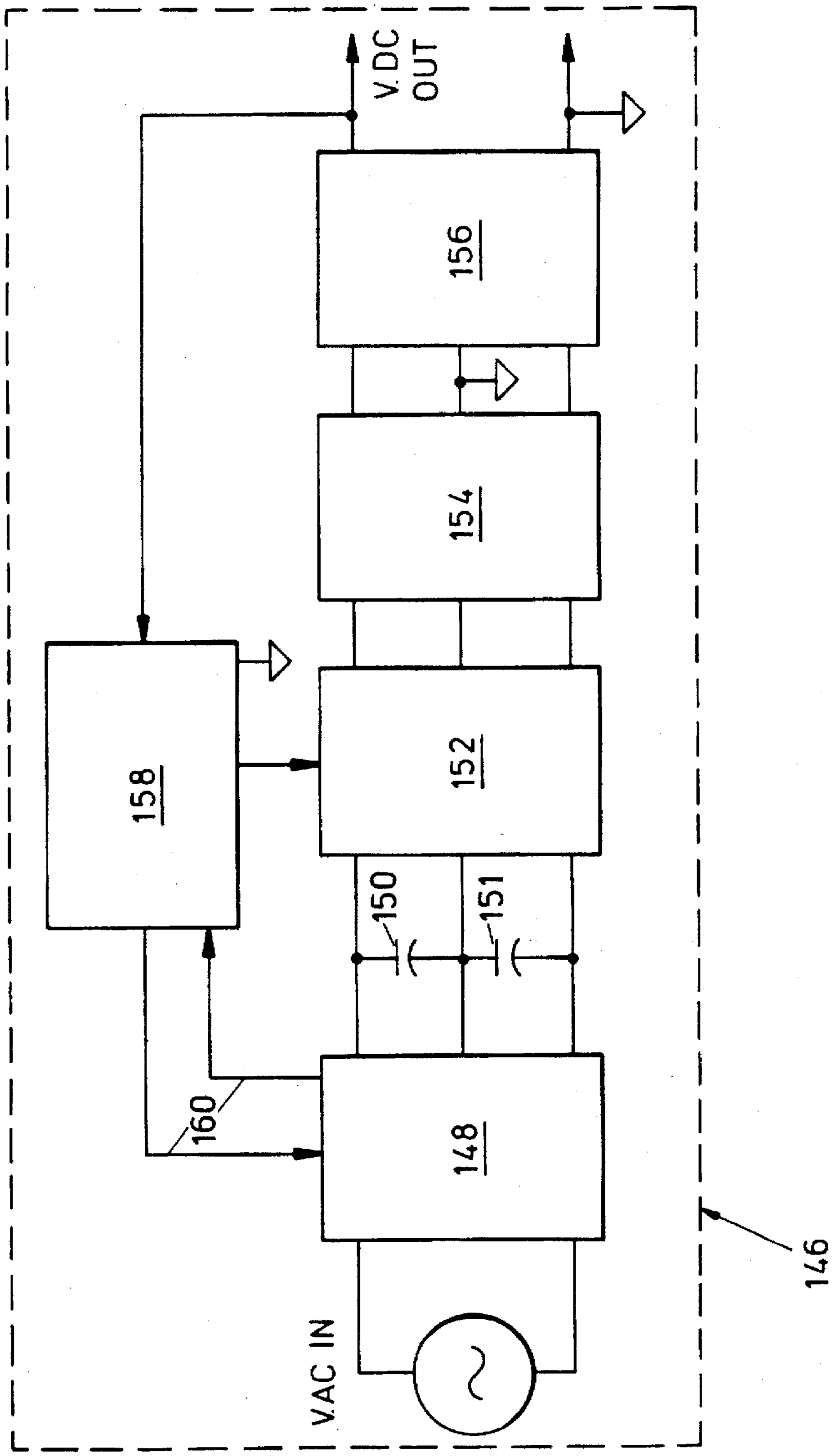

FIG. 8

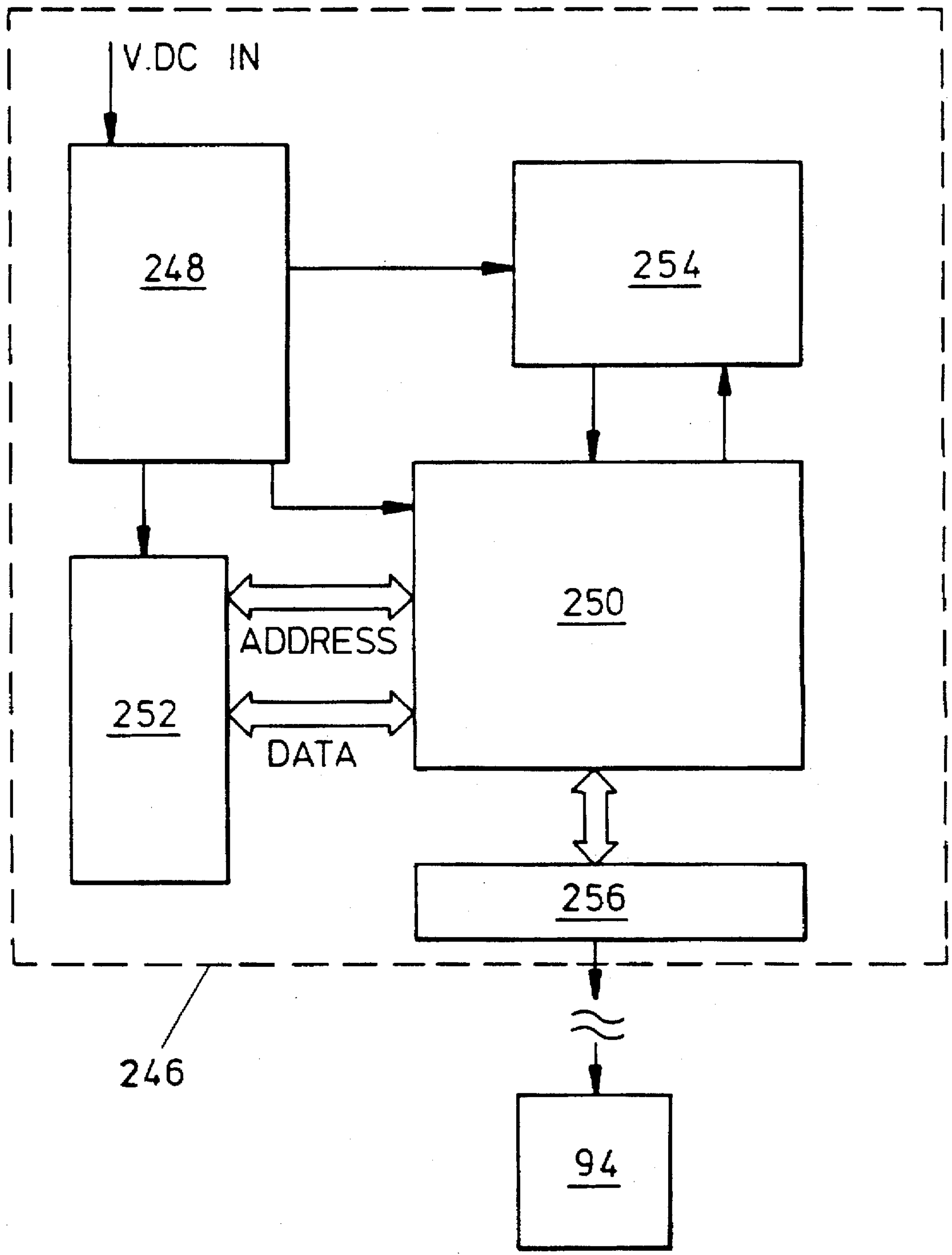

FIG. 9

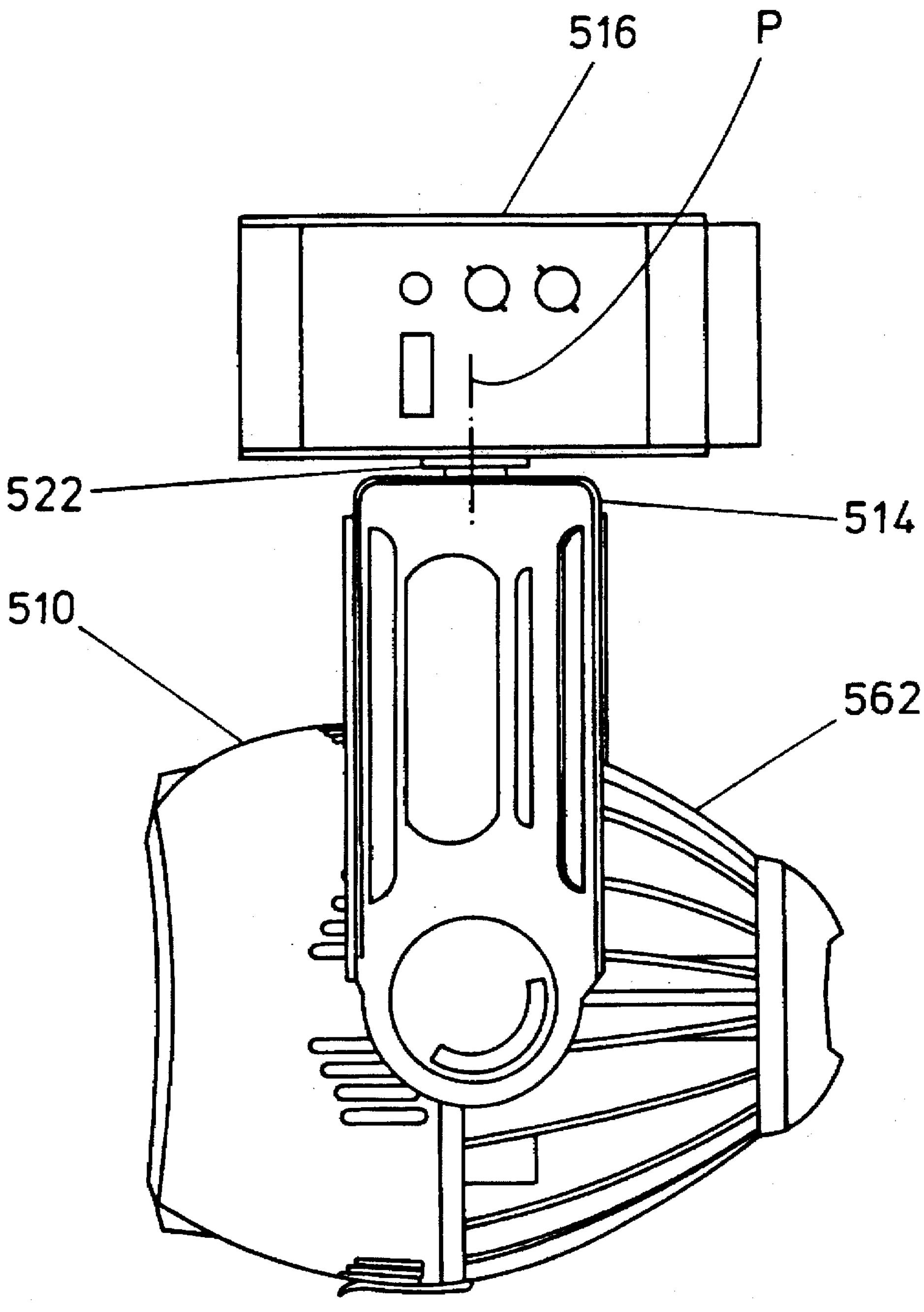

FIG. 10

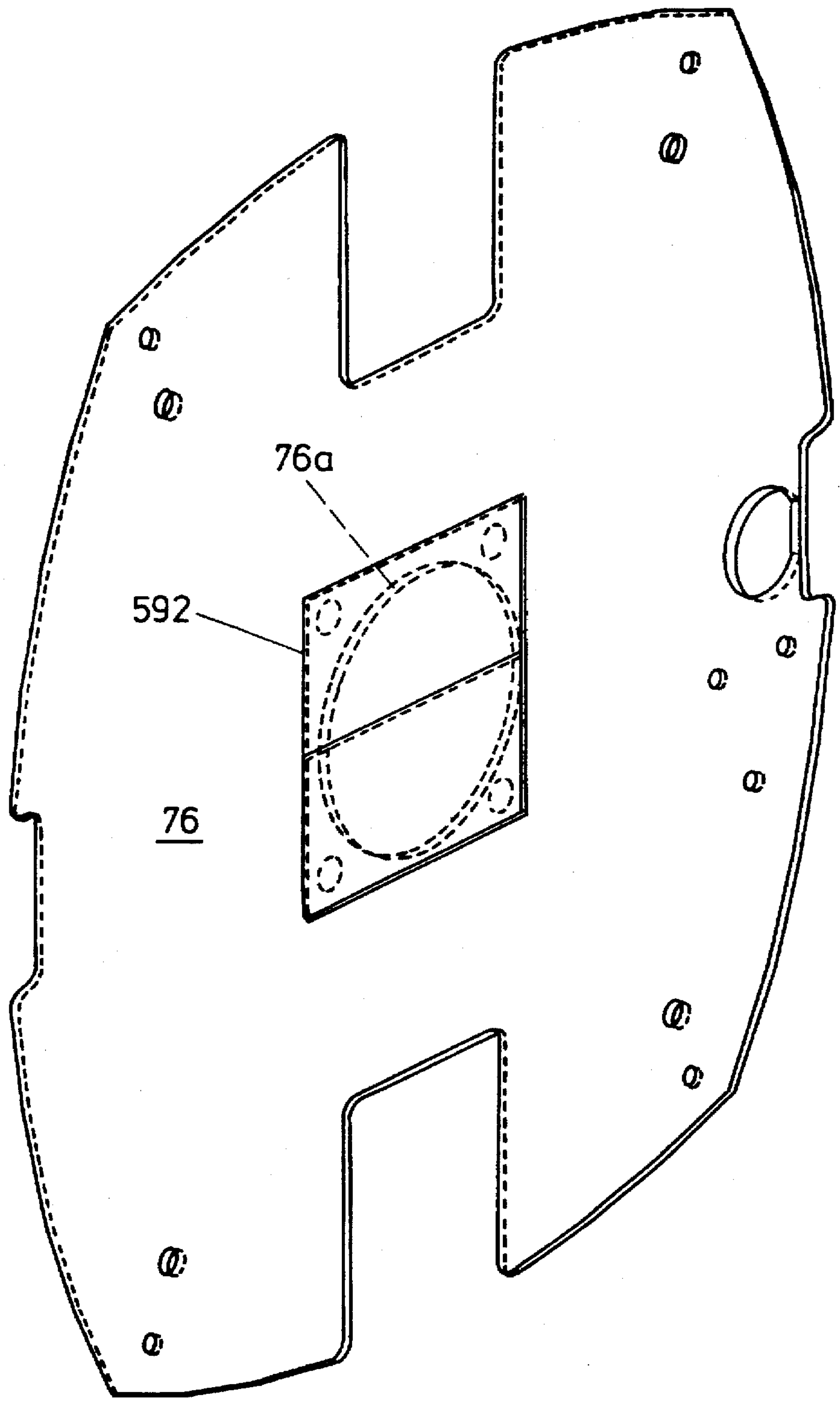

FIG. 11

LIGHTING SYSTEM WITH MULTIPLE BEAM SHAPES

FIELD OF THE INVENTION

This invention relates generally to stage and theater lighting fixtures and more particularly to a color wash luminaire which provides variable intensity, variable color, variable positioning and variable beam shapes and angles in a single compact fixture.

BACKGROUND OF THE INVENTION

Wash lights, as they are generally known, are used to provide uniform illumination and coloration to a theatrical set. Lights used in a studio or for photographic purposes often project a round cross-sectional pattern of light such as that seen by the ordinary flashlight. Simple devices utilize a reflector and a lamp or utilize sealed beam lamps, such as automotive head light type lamps. These sealed lamps consist of a reflector, a lamp and a type of diffuser or lens to soften the projected spot, and sometimes to focus the projected spot from either a narrow spot or a wide flood. More complicated arrangements involve ellipsoidal reflectors or condensing systems which focus light through an aperture which is imaged by projector lenses.

These types of systems commonly produce a more uniform beam of light than that of the sealed beam type. Other types of lights used include fresnel projectors, which utilize a fresnel projecting lens. The fresnel projecting lens is known to provide a beam of light that is homogenous with a gradual rolloff of light output toward the edges. Many of the things illuminated on a stage or studio do not always require a round beam of light since many stages or studio sets can often be more wide than they are tall. Illuminated subject areas often require the use of a framing projector or devices known as ham doors which can be utilized to change cross-sectional pattern or the shape of the beam by shadowing the light projected from the device as a means to change the shape of the beam.

The foregoing illustrates limitations of the known prior art. Thus it is apparent that it would be advantageous to provide alternatives directed to overcoming one or more of the limitations as set forth above. Accordingly, suitable alternatives are provided including features and benefits more fully disclosed hereinafter.

SUMMARY OF THE INVENTION

In one aspect of the present invention this is accomplished by providing overlapping lenses for use in a light fixture provided to project a beam of light. The beam projects a first beam shape having a first cross-sectional geometry. A first lens device including at least one lenticular lens element, is supported in the fixture and is movable into a position to interrupt the beam of light for altering the first projected beam shape from the first cross-sectional geometry to a second projected beam shape having a second cross-sectional geometry different from the first geometry. A second lens device, separate from the first lens device and including another lenticular lens element overlapping the one lenticular lens element of the first lens device, is supported in the fixture and is movable into a position to interrupt the beam of light for altering the second projected beam shape from the second cross-sectional geometry to a third projected beam shape having a third cross-sectional geometry different from the first and second geometries.

In another aspect of the present invention, this is accomplished by providing a light fixture including the overlapping lenses. The light fixture may be a moving light fixture and may be of the type including a yoke and means for movably suspending the yoke from a support. A housing is movably connected to the yoke and has a portion including a light source and means for removing heat generated from the light source. Another portion includes a plurality of movable color filters and the overlapping lenses, the light source being operable to project a beam along a path through the color filters and the lens devices. One of the lenses includes a lenticular lens element having a plurality of lenticules oriented in a first direction and the other of the lenses includes a lenticular lens element having a plurality of lenticules oriented in a second direction, different from the first direction.

In a further aspect of the present invention, this is accomplished by providing a light fixture having multiple lens apparatus for changing a shape projected by a beam of light comprising means for projecting a circular beam of light, and overlapping lens devices each including a lenticular lens element movable into a position to interrupt the beam of light for selecting beam shape by altering a circular beam pattern to ellipsoidal beam patterns and for moving the ellipsoidal beam patterns to a desired orientation.

The foregoing and other aspects will become apparent from the following detailed description of the invention when considered in conjunction with the accompanying drawing figures. It is to be expressly understood, however, that the figures are not intended as a definition of the invention but are for the purpose of illustration only.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

FIG. **1** is a frontal view, with partial cutaway portions, illustrating an embodiment of the luminaire of this invention;

FIG. **2** is a perspective view, with partial cutaway portions, illustrating an embodiment of the luminaire of this invention;

FIG. **3** is a cross-sectional view, illustrating an embodiment of the housing of this invention;

FIG. **4** is a perspective view, with partial cutaway portions, illustrating an embodiment of the housing of this invention;

FIG. **5** is another perspective view, with partial cutaway portions, illustrating an embodiment of the housing of this invention;

FIG. **6** is a plan view illustrating an embodiment of the color filter of this invention;

FIG. **7A** is a planar view illustrating an embodiment of the rotatable lenticular lens device of this invention;

FIG. **7B** is a planar view illustrating an embodiment of another rotatable lenticular lens device of this invention;

FIG. **8** is a diagrammatic view illustrating an embodiment of the power board of this invention;

FIG. **9** is a diagrammatic view illustrating an embodiment of the logic board of this invention;

FIG. **10** is a side elevation view illustrating another embodiment of the luminaire of this invention; and

FIG. **11** is a perspective view illustrating an embodiment of the hot plate and ultra violet filter of this invention.

DETAILED DESCRIPTION OF THE INVENTION

This invention includes overlapping rotating lens devices each including lenticular lens elements movable into a position to interrupt the beam of light for selecting beam shape by altering a circular beam pattern to ellipsoidal beam patterns and for moving the ellipsoidal beam patterns to a desired orientation.

Referring now to the drawings, FIGS. **1** and **2** illustrate the wash luminaire of the present invention, generally designated **10**. Luminaire **10** comprises a housing **12** connected to a yoke **14** which may be suspended from a supporting truss (not shown) by means of a damp (also not shown) attached to yoke **14** at connector **16**.

Yoke **14** comprises a suitable metal frame **18** including a metal bracket **20** to reinforce yoke **14**. Connector **16** is bearing mounted and connected by means of a shaft **22** to a gear **24** positioned adjacent bracket **20**. Gear **24** includes a notch (not shown) which operates with an adjacent position sensor (not shown) for pan position control. A motor **26**, supported by frame **18**, drives belt **28** to rotate gear **24** for the purpose of providing a 360 degree rotation about the centroidal axis P of shaft **22**. This provides the pan capability to luminaire **10**. A suitable idler arrangement **30** is provided to engage belt **28**.

Another motor **31**, also supported by frame **18**, drives belt **32** to rotate gear **34** for the purpose of providing at least a 270 degree rotation about the centroidal axis T of a shall **36**. Similar to gear **24**, gear **34** includes a notch **34***a*which operates with an adjacent position sensor **34***b* for tilt position control. This provides the tilt capability to luminaire **10**. Another suitable idler arrangement **38** is provided to engage belt **32**. A travel stop **37** is connected to the tilt mechanism to limit movement of luminaire **10** to a desired tilt angle.

A manual off-on switch or breaker **52** is also mounted externally on yoke **14**. A cooling fan **48** mounted in a housing **50** is operable to draw cooling air into yoke **14** through a plurality of vents **54**, across the internal components of yoke **14**, and outwardly through a similar plurality of vents **56**. A cover **59**, formed of a rigid synthetic material, which includes vents **54** and **56**, encloses yoke **14** and the above described components.

In FIGS. **3**, **4**, and **5**, housing **12** is illustrated and generally comprises an aluminum casting **57** and a bezel **58**, formed of a suitable rigid synthetic material. Casting **57** includes a base **60**, at a first end, from which a first plurality of contoured external cooling fins **62** extend. A stepped annular relief **66** is provided within casting **57** and includes an annular portion **64** and a truncated elliptical portion **69**. Annular portion **64** also includes cooling vents **65**. A second plurality of internal cooling fins **63** are disposed about an inner annular periphery of annular portion **64**. First and second fins **62**, **63**, respectively, are aligned.

An aluminum end cap **68** is mounted on a second end of Casting **57**. A lamp base **70** and lamp **72** are mounted on end cap **68**. Lamp **72** extends into open annular relief **66**. An elliptical reflector **74** is also mounted in elliptical portion **69** so as to suitably surround lamp **72**. Lamp **72** is powered by AC power in a conventional manner.

An aluminum heat blocking wall, or hot plate **76**, is mounted on the first end of casting **57**, and is spaced from a motor mounting plate **78** by spacer elements **80**. A plurality of motors **82** are mounted on motor mounting plate **78** and rotating shafts **84**, extending from motors **82**, are operable to be belt driven to rotate a plurality of staggered color filters **86**, a pair of overlapping, staggered lenses **87**, **88** and a conventional color wheel **89**. Tabs, such as tab **86***a*, on color filter **86**, are provided on these shaft mounted, rotating lenses, filters, etc., to operate with a plurality of respective adjacent position sensors **257** mounted on a pair of motor/driver sensor boards **94** mounted between plates **76**, **78** for the purpose of sensing the positions of each of the shaft mounted rotating devices including color filters **86**, etc.

Light beam L, FIG. **3**, is condensed to a diameter of about 1.25 inches in diameter where it exits casting **57** at an opening **76***a* in hot plate **76**. The beam then passes through the series of wheels; color filters, lens, etc. In the embodiment of FIG. **3**, bezel **58** houses a series of **6** wheels. Color wheel **89**, dichroic coated color filter (yellow) **86***y*, dichroic coated color filter (cyan) **86***c*, dichroic coated color filter (magenta) **86***m*, and lenses **87** and **88**. Three of these wheels are mounted on shaft **84** and another three are mounted on a corresponding shaft **84**. The 2 sets of 3 wheels are interleaved, i.e. partially overlapped, in known fashion, to optimize the number of surfaces exposed to beam L. The positions of the three wheels on one shaft **84** are sensed by their respective sensors **257** on one of the boards **94**, and the positions of the other three wheels on the other shaft **84** are similarly sensed by their respective sensors **257**.

Color filters **86***y*, **86***c* and **86***m*, FIG. **6** comprise a disc-shaped borosilicate glass substrate **301** having a planar surface **302** which includes a photolithographically etched film **303** deposited thereon. Film **303** forms a Gausian pattern arcuate band **304** extending around a substantial portion of planar surface **302**. Band **304** has an inner edge **305** and an outer edge **306** and the density of film **303** is greater in an area designated g+ along a radius r between inner edge **305** and outer edge **306** and less in an area designated g− along radius r at inner edge **305** and less in a corresponding area g− along radius r at outer edge **306**. A portion of substrate **301** is cut away to form a notch **307** which interrupts arcuate band **304**. A portion p of planar surface **302** adjacent notch **307** is coated with a solid film **303***a* having no pattern as on the etched film **303** in band **304**.

Color filters **86***y*, **86***c* and **86***m* are used in combination with lamp **72** to produce desired color effects. Beam L, produced by lamp **72**, is circular and has a typical power gradient, which is not uniform across the beam. A ratio of power from the center of the beam to beam edge is often on the order of 50%. Known variable density filters which do not address the power gradient of the beam, produce results which are non-uniform and leave an apparent white spot in the center of the beam while darkening the beam edge which makes the coloration objectionable.

Advantageously, the Gausian patterning of the color filters of this invention is coincident with the inverse of the power gradient of the beam L. That is, the color filter gradient is greatest toward the center of the band **304** where it crosses the maximum power point of the beam L. In this manner, the maximum power of the beam L is coincident with the maximum filtering effect of filters **86***y*, **86***c* and **86***m*.

Saturation of the Gausian color pattern increases proportionally as the filter is rotated in a direction represented by directional arrow D, FIG. **6**, culminating in 100% saturation at about 300 degrees of angular travel where portion p of planar surface **302** is coated with solid film **303***a*.

If it is desired, a bracket **90** is mounted on hot plate **76** to position a heat filter **92** to reflect IR radiation R back to the cooling fins **63**, **62** to be dissipated from housing **12**. Heat filter **92** comprises the bracket **90**, FIGS. **3** and **4**, which is generally of an A-frame construction and includes a first filter **98***a* mounted at about a ninety degree angle relative to a second filter **98***b*. Filter **92** is used to reflect damaging infrared radiation R away from the previously mentioned heat sensitive optical components mounted on shafts **84**. Thus, these filters are at an angle to light beam L passing therethrough. The result is a reflection of IR radiation outwardly toward the fins, as is best shown in FIG. **3**. First and second filters **98**a, **98**b, respectively are preferably formed of a suitable 1.75 mm thick substrate of borosilicate glass material and has a thin film dichroic coating on both sides. The coating on one side facing lamp **72**, will provide infrared reflectance of from about 730 nm to about 1,050 nm. The coating in the opposite side will provide reflectance of from about 1,050 nm to about 1,700 nm.

Heat filter **92** can be eliminated. However, preferably a filter for blocking ultra violet rays from reaching the color wheels and their drive systems may be utilized. Such a filter **592**, FIG. **11**, may take the form of a borosilicate glass material positioned between the lamp and the color wheels. For example, the filter **592** may be suitably mounted on the hot plate **76** in place of heat filter **92** in position to filter light beam L before it passes through opening **76**a in hot plate **76**.

A lenticular lens device **88**, FIG. **7**A is rotatably mounted adjacent one side of motor mounting plate **78**. Lens device **88** is mounted on one of the shafts **84** which is rotatably driven by one of the motors **82** suitably attached on another side of motor mounting plate **78**. Lens device **88** comprises a disc shape and is formed of an aluminum or other suitable metal retainer **188** having a plurality of openings **188**a, **188**b, **188**c, **188**d formed therein. An aperture **188**e in the geometric center is for receiving shaft **84** whereby lens device **88** is rotatable. One of the openings **188**a includes a lenticular lens element **288**a formed of a suitable high temperature glass having a plurality of substantially parallel radially extending grooves or lenticules **398**a formed therein. Another of the openings **188**b includes substantially the same lenticular lens element **288**b but having the grooves or lenticules **388**b oriented at 90 degrees relative to lenticules **388**a. Lenticular lens elements **288**a and **288**b will change the geometric shape from a circular to an elongated ellipsoidal shape. Still another of the openings **188**c includes either a suitable well know frost material **288**c, FIG. **7**A, which will diffuse and soften the beam L and spread out the beam angle but will not affect the geometric shape of the beam. The last of the openings **188**d remains open and contains no lens element so that the light beam passing there through retains its normal light pattern having a circular cross-sectional geometry. The lens elements **288**a, **288**b, **288**c or **488**c may be fixedly secured to retainer **188** by a suitable high temperature silicone based adhesive or may be removably secured by some suitable attachment device.

Another lenticular lens device **87**, FIG. **7**B is rotatably mounted similar to device **88** but staggered to overlap device **88**. Lens device **87** is similar in construction to device **88** except that a homogeneous lens element **488**c is provided in place of the frost material **288**c of device **88**. As it is known, the homogeneous lens element **488**c includes an array of adjacent convex surfaces which function to change the magnification and increase the beam angle but will not affect the geometric shape of light beam L. As a result, lens device **87** includes a lenticular lens element **288**a' having a plurality of substantially parallel radially extending grooves or lenticules **388**a' formed therein and lenticular lens element **288**b' having grooves or lenticules **388**b' oriented at 90 degrees relative to lenticules **388**a'. Homogeneous lens element **488**c is provided instead of frost and **188**d' remains open.

In FIGS. **7**A and **7**B lens devices **87**, **88** are illustrated. When the device **88** is mounted in fixture **10** for rotation on shaft **84** engaged in aperture **188**e, a fixed beam of light L passes through lens device **88** as the device **88** is rotated. When opening **188**d is in the path of beam L, there is no affect on the beam since there is no lens in opening **188**d. When device **88** is rotated to a position where frosted lens **288**c interrupts beam L, the beam angle is affected but the geometric shape of beam L is unchanged. However, when lenticular lens elements **288**a and/or **288**b interrupt the beam L, the normally projected circular geometric shape of beam L is changed to an oblong or ellipsoidal shape O as illustrated in phantom in FIG. **7**A. Furthermore, as the lens device **88** is rotated through fixed beam L, the oblong shape of beam O changes in orientation.

For purposes of illustration only, several radii are shown in FIG. **7**A and extend outwardly through six different positions where rotating lens device interrupts fixed beam L. In a first position the orientation of altered beam O1 on radius R1 is aligned with the direction of lenticules **388**a as they extend across beam L1 which remains fixed. As viewed in FIG. **7**A, the oblong projected beam O1 is slightly canted to the right with reference to radius R1. In a second position, the orientation of altered beam O2 on radius R2 is aligned with the direction of lenticules **388**a as they extend across fixed beam L2 which is actually in the same fixed position as the beam designated L or L1. As viewed in FIG. **7**A, the longitudinal axis of the projected beam O2 is vertically aligned with reference to radius R2 and as the lens device **88** is further rotated, the oblong projected beam O3, O4, O5 and O6 constantly changes orientation in the direction of rotation with reference to its respective radii R3, R4, R5 and R6 due to the changing orientation of lenticules **388**a and **388**b extending across the fixed light beam.

With the foregoing orientation description in mind, it can be appreciated that the overlapping lens devices **87**, **88** provide a wide variety of beam shapes including combinations of beam shapes heretofore not available. The combinations include circular and ellipsoidal beam shapes with or without frost, with or without increased beam angle, or with overlapping ellipsoidal beam shapes, for example where lens element **288**a overlaps lens element **288**b' wherein the ellipsoidal beam shape provided by one lenticular lens element, i.e. **288**a, can extend in a longitudinal direction which is angularly disposed relative to the longitudinal direction of the ellipsoidal beam shape provided by another lenticular lens element, i.e. **288**b', of an overlapping lens device. This unique combination provides enhanced lighting effects not previously available.

Also included in yoke **14** is a power supply board **146**, best shown in FIG. **8**, mounted behind a portion designated **46** of metal frame **18**. Power supply board **146** is the motor and logic power supply for movement of luminaire **10**. Power supplied to board **146** may be 100 to 240 VAC (50/60 Hz). A voltage selection rectification **148**, changes AC to DC voltage and operates to double the voltage if less than 150 VAC. Output is stored in capacitors **150**, **151** and then a half bridge **152** switches the DC back to AC voltage at 40 kHz. The 40 kHz goes into a transformer **154** which steps the voltage down and isolates the live voltage from the low voltage output circuit. The AC voltage is rectified back to DC voltage and filtered via an inductor-capacitor arrangement at **156**. A voltage mode, pulse width modulator controller **158** is responsible for the feedback of the output voltage and controls the half bridge **152** to produce a constant output voltage. Also, a voltage sensor for doubler circuit control is provided at **160**.

A logic board **246**, best shown in FIG. **9**, is mounted in yoke **14** behind a portion designated **40**, of metal frame **18**. The logic board is operably connected to a controller and controls the above-mentioned pan and tilt, and also controls color wheels, etc., and other operable components of the luminaire **10**. Power from power board **146** is fed to logic board **26** at from about 9 VDC to about 40 VDC through a voltage regulator circuit **248**. The power is then communicated to a commercially available embedded microprocessor **250**. The power is also communicated to a memory block **252** which comprises **3** different types of memory including Static RAM, Flash ROM and EPROM. The memory **252** is utilized by the microprocessor **250** to perform read/write operations on the code and data stored in the **250** memory which signals pan and tilt commands to luminaire **10**. A serial transceiver provides RS 485 compatible signals to industry standard USITT DMX512 controllers and exchanges (receives and transmits) information with microprocessor **250**. A slave serial module **256** receives information from microprocessor **250** and serializes data received and sends it out over **5** wires to slave modules including motor driver/sensor boards **94** which include infrared photo interrupter sensors **257**, FIG. **3**, which respond to tabs and/or notches on component parts of luminaire **10** such as notch **34***a*formed in gear **34**, FIG. **2** or tab **86***a* on color filter **86**, FIG. **3**, which tells the microprocessor **250** the initial (zero or homing) position of motors **26**, **82**, respectively. The serial module **256** retrieves the position information from sensors **257** and sends it to the microprocessor **250** which determines whether to continue to move the filter or gear or to look for the tab/notch.

Another arrangement is illustrated in FIG. **10**, and includes a fixture housing **510**, a yoke **514** and an electronics housing **516**. In this arrangement, power board **146** and logic board **246**, FIGS. **8** and **9** are positioned in electronics housing **516**. Also, in housing **516** are the previously described motor **26**, bolt **28** and gear **24** arrangement, see FIG. **1**, for driving the 360 degree pan position control which rotates housing **510** about centroidal axis P of shaft **522** which interconnects yoke **514** and electronics housing **516**. No fan such as fan **48**, described previously as being positioned in yoke **14**, and cooperative vents **54**, **56**, are needed with removal of the electronics including logic board **246** and power board **146** from the yoke. The previously described tilt mechanism, see FIG. **1**, including motor **31**, belt **32** and gear **34**, would however remain in the yoke to provide the 270 degree rotation. Housing **510** may also include contoured, radially directed cooling fins **562** formed as part of aluminum casting **557**.

A stationary lens **96**, is mounted in bezel **58**, best shown in FIG. **1**. Lens **96** is a common light diffusing lens similar to a lens used in an automotive headlight. Such lenses are commercially available. The above described combination of overlapping, rotating lenses **87**, **88** and stationary lens **96** provide a beam angle which is preferably from about 10 degrees to about 60 degrees.

This can be varied by rotation of lenses **87**, **88** and enhanced by interchanging a selected diffusing lens **96**.

While this invention has been illustrated and described in accordance with a preferred embodiment, it is recognized that variations and changes may be made therein without departing from the invention as set forth in the claims.

Having described the invention, what is claimed is:

1. Overlapping lenses for use in a light fixture provided to project a beam of light comprising:

the beam projecting a first beam shape having a first cross-sectional geometry;

first means supported in the fixture and movable into a position to interrupt the beam of light for altering the first projected beam shape from the first cross-sectional geometry to a second projected beam shape having a second cross-sectional geometry different from the first geometry, the first means including at least one lenticular lens element; and

second means, separate from the first means, supported in the fixture and movable into a position to interrupt the beam of light for altering the second projected beam shape from the second cross-sectional geometry to a third projected beam shape having a third cross-sectional geometry different from the first and second geometries, the second means including another lenticular lens element overlapping the one lenticular lens element of the first means.

2. A light fixture having multiple lens apparatus for changing a shape projected by a beam of light comprising:

means for projecting a beam of light, the beam projecting a first beam shape having a first cross-sectional geometry;

a first lens device supported in the fixture and movable into a position to interrupt the beam of light for altering the first projected beam shape from the first cross-sectional geometry to a second projected beam shape having a second cross-sectional geometry different from the first geometry, the first lens device including at least one lenticular lens element having a plurality of lenticules oriented in a first direction; and

a second lens device, separate from the first lens device, supported in the fixture and movable into a position to interrupt the beam of light for altering the second projected beam shape from the second cross-sectional geometry to a third projected beam shape having a third cross-sectional geometry different from the first and second geometries, the second lens device including another lenticular lens element overlapping the one lenticular lens element of the first lens device, and having a plurality of lenticules oriented in a second direction, different from the first direction.

3. The fixture as defined in claim **2** wherein the first and second lens devices are rotatably mounted in the fixture.

4. The apparatus as defined in claim **2** wherein the first lens device is a first disc rotatably mounted in the fixture and the second lens device is a second disc rotatably mounted in the fixture.

5. The apparatus as defined in claim **2** wherein the first projected beam shape is of a circular cross-section, the second projected beam shape is of an ellipsoidal cross-section having a longitudinal axis extending in the first direction, and the third projected beam shape is a combination of the second shape and another ellipsoidal cross-section overlapping the second shape and having a longitudinal axis extending in the second direction.

6. A moving light fixture comprising:

a yoke;

means for movably suspending the yoke from a support;

a housing movably connected to the yoke, the housing having a first portion including a light source and means for removing heat generated from the light source, and a second portion including a plurality of movable color filters and a plurality of lens devices, the light source being operable to project a beam of light having a first beam shape of a first cross-sectional geometry, along a path through the color filters and the lens devices;

a first one of the lens devices supported in the fixture and movable into a position to interrupt the beam of light for altering the first projected beam shape from the first cross-sectional geometry to a second projected beam shape having a second cross-sectional geometry different from the first geometry, the first lens device including at least one lenticular lens element; and

a second lens device separate from the first lens device, supported in the fixture and movable into a position to interrupt the beam of light for altering the second projected beam shape from the second cross-sectional geometry to a third projected beam shape having a third cross-sectional geometry different from the first and second geometries, the second lens device including another lenticular lens element overlapping the one lenticular lens element of the first lens device.

7. The apparatus as defined in claim **6** wherein the first and second lens devices are rotatably mounted in the fixture.

8. The fixture as defined in claim **6** wherein the first lens device is a first disc rotatably mounted in the fixture and second lens device is a second disc rotatably mounted in the fixture.

9. The fixture in claim **8** wherein each of the first and second discs include a plurality of lens elements mounted for automated sequential positioning in the beam of light.

10. The fixture as defined in claim **6** wherein the first projected beam shape is of a circular cross-section, the second projected beam shape is of an ellipsoidal cross-section having a longitudinal axis extending in a first direction, and the third projected beam shape is a combination of the second beam shape and ellipsoidal cross-section overlapping the second beam shape and having a longitudinal axis extending in a second direction different from the first direction.

11. The fixture as defined in claim **8** whereto the first disc includes a frost lens element and at least on lenticular lens element, and the second disc includes a homogeneous lens element and at least one lenticular lens element.

12. The fixture as defined in claim **8** wherein the first disc includes at least one lenticular lens element having lenticules extending radially outwardly from the geometric center of the first disc and the second disc includes at least one lenticular lens element having lenticules extending normal to a radial extending from the geometric center of the second disc.

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