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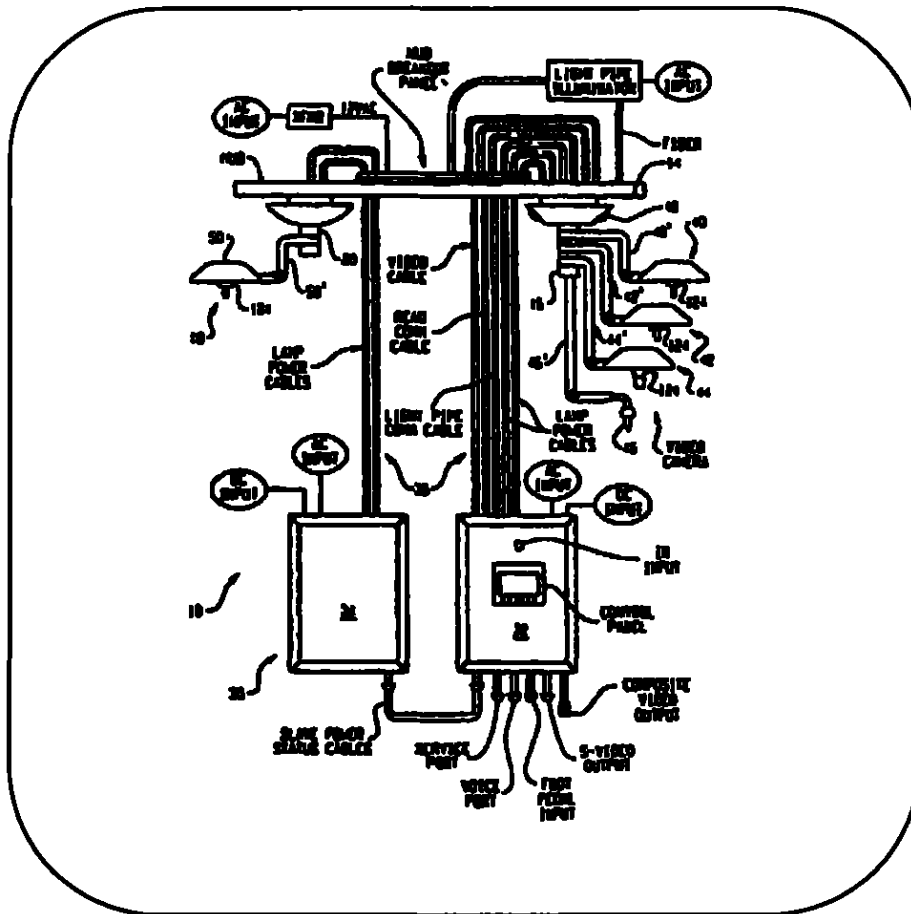
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FIGURA CARACTERISTICA:



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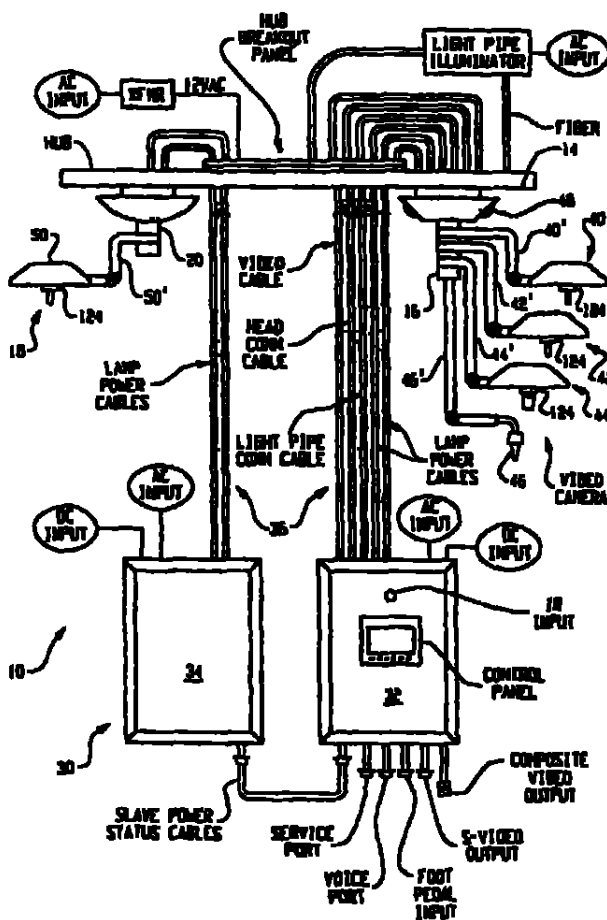
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(54) Title: SURGICAL LIGHTING CONTROL VIDEO SYSTEM



(57) Abstract: A surgical light system (10) includes a lighthead (44) coupled to a suspension arm (41) adapted for mounting to a surface (14) of a surgical room. A bulb (130) is disposed in the lighthead. A processor (120) in the lighthead is operatively coupled with the bulb for controlling an intensity of light of the bulb and is adapted to generate a lighthead status signal representative of a first status of the lighthead. A control apparatus (32, 34) is in operative communication with the processor (120) in the lighthead. The control apparatus receives the lighthead status signal and selects a set of control algorithms from among a group of algorithms based on the lighthead status signal for controlling the lighthead. The lighthead status signal includes information regarding a size of the lighthead, an intensity of light from the bulb, a condition of the bulb, a level of current applied to the bulb, a level of current applied to the bulb, a level of voltage applied to the bulb, an internal temperature of the lighthead, and the presence of one or more of a video camera, a surgical task light, and a controllable ambient light. A human-readable display device (160) is provided for displaying information relating to the lighthead status signal. Several levels of redundancy are provided in the control system to minimize the potential loss of control due to failures. In that regard, the lightheads are operable when the control apparatus (32, 34) fails.

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SURGICAL LIGHTING CONTROL AND VIDEO SYSTEM**Cross-Reference to Related Application**

This application claims the benefit of U.S. provisional application Serial No. 60/348,999, filed January 15, 2002.

5 Background of the Invention

The present invention relates to the surgical lighting, table, and accessory arts, and, more particularly, to a surgical lighting control system providing multiple user interfaces, centralized graphical control for various functions, advanced
10 camera detection/signal routing, and closed loop control of lamp intensity. It finds particular application in conjunction with providing a comprehensive control system for a surgical operating room (OR) theater and will be described with particular reference thereto. It is to be appreciated, however, that the invention also
15 finds application in other multi-task control applications and is not limited to the aforementioned operating room environment.

Typically, in an operating room setting, large, high lumen output lightheads are used to illuminate the surgical site. Often, video cameras, are attached to the lightheads for
20 documenting the surgery, and to assist the surgeon in achieving more optimal views. Some systems offer no control of the camera to personnel in the OR. Without physically moving the camera/lighthead, such systems only offer a single camera orientation and zoom factor. Other systems offer control of the
25 camera and lightheads to personnel in the OR, but not to the surgeon. The surgeon must request that a non-sterile circulating nurse adjust the lighting controls or the camera controls when needed.

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Existing systems do not monitor power delivered to the bulbs within the lighthead. This results in light intensity fluctuations due to bulb deviations, voltage fluctuations, and line resistances. Variances in the lamp power can reduce light intensity with potential adverse effects on the surgical procedure or increase light intensity causing a reduced lamp life.

Additionally, most existing systems do not offer centralized control. Accordingly, the circulating nurse staff must move first to one panel to operate light intensity controls, then to another location to rotate the camera, etc. This leads to confusion when operating the systems, and clutter in the OR due to additional user interface locations.

In systems using a centralized control, hardware updates/upgrades are difficult because the software of the control often cannot be adapted to recognize and operate with the new equipment. It would be desirable to provide a surgical lighting and video control system with software adapted to interact with new equipment through simple software parameter updates or settings.

The present invention provides new and improved methods and apparatus that overcome the above referenced problems and others to provide better, more comprehensive control of lighting and video systems in surgical operating room applications.

Brief Summary of the Invention

The preferred embodiments of the present invention provide a plug and play control interface that gives a user access to multiple devices at one station, gives the surgeon control of more devices within the sterile field, and makes control of the system simpler and more intuitive.

The present invention improves user access to the system by providing a graphical LCD display for use to control a plurality of devices, such as overhead lighting, ambient lighting, cameras, and other operating room accessories. The surgeon's control is improved by a voice interface system, allowing the surgeon to adjust lighting and other aspects by simply speaking. A foot pedal interface and an infra-red remote control interface grant the

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surgeon control of the cameras, enabling direct control of rotate and zoom functions of the camera.

The preferred embodiments of the present invention provide plug and play compatibility, so that devices such as cameras, entire lightheads, task lights, and other surgical accessories can be switched in and out of the system as needed, without the need to update system software or control protocol. This may occur as additional lightheads or other devices are added to the system or when devices are replaced as by way of an upgrade or the like.

A wall control unit of the subject system provides a graphical LCD display that enables centralized user input/output for all controls. The wall control also provides input/output connections for system options such as a video, recording device, voice control, a fiber-optic task light, and camera foot control. The LCD interface provides high-level user control of the video camera fiber optic task light, ambient light, and multiple lightheads.

All medium and large sized lightheads are preferably camera ready. A camera module can be placed into any of these lightheads as desired. The control system is adapted to automatically detect the particular lighthead in which the camera is located and direct the signal to the wall control through electronic means in a "plug and play" fashion.

Further, service function is incorporated into the system that allows service or maintenance personnel to disconnect entire lightheads for replacement with new lightheads. The control system detects a new lighthead and downloads compatible software to the lighthead (plug and play) as necessary. This decreases product down time due to service calls. Each lighthead includes a micro-controller adapted to send and receive control information from the wall control and further adapted to respond to the switches on the light handle bezel.

The micro-controller also provides closed loop control for tight control over lamp power. The controller measures lamp voltage and current and sets a duty cycle for a pulse width

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modulation (PWM) circuit. This effectively gives consistent light by compensating for most all sources of variation.

The advanced control allows all lightheads in the system to be turned on/off from the switch bezel input on any light in the system. Pushing and holding the '-' intensity down button at the bezel of the lighthouse handle for a selected period, preferably four (4) seconds turns all lightheads off and preferably simultaneously turns an ambient light on. Pushing and holding the '+' intensity up button a selected period preferably for two (2) seconds turns all the lightheads on and preferably simultaneously turns the ambient light off.

The wall control provides a simple, centralized user interface saving time for the circulating nurse. The advanced control of the switches on the light handle bezel gives control of the lights to the surgeon as well. This saves time for the entire staff.

The control system provides several levels of redundancy in order to minimize the potential loss of control of the lighting system during surgical procedures. Either one of the two power supplies in the control center is sufficient to maintain operation of the microcontroller. If the microcontroller or switches in the wall control unit fail, then ON/OFF and intensity control functionality can be performed using just the lighthouse-based microcontroller and switches.

Video camera features are accessible through the user interface, including at least power and zoom, rotate, brightness and focus controls. Advanced camera controls are also accessible through the user interface including white balance, picture freeze, time and date display as examples. The camera module is adapted for connection with any medium or large lighthouse. The control system of the subject system automatically detects camera module presence and directs the video signal(s) to the wall control.

Many control features are provided in the surgical lighting system according to the invention. A graphical user interface, preferably, a LCD display provides for centralized control of all components in the system. ON/OFF control of all

lighthoods is provided in the system from a single point of intensity control at the light handle switch bezel while maintaining sterile technique. Advanced camera control features are provided including white balance, picture freeze, time and date display. The control system detects the camera module and directs the video signal to the wall control. This coincides with the system's ability to accept a camera module at multiple locations. A closed-loop lamp power control scheme maintains consistent intensity levels over time and over differing installation conditions. The wall control senses new lighthoods and automatically download software to make the lighthood compatible in the system.

The above list is not exhaustive of the control features provided in the surgical lighting systems according to the invention.

Brief Description of the Drawings

The invention may take form in certain methods, parts, and arrangements of parts, the preferred embodiments of which will be described in detail in this specification and illustrated in the accompanying drawings which form a part hereof and wherein:

FIGURE 1 is a perspective view of a surgical light system in accordance with the present invention showing a first set of surgical lighting equipment suspended from a primary spindle and a second set of lighting equipment suspended from a secondary spindle, and a system control apparatus;

FIGURE 2 is a block diagram illustrating components of the subject lighting control apparatus;

FIGURE 3 is a block diagram illustrating functional blocks of an electronic module of the subject surgical lighting system;

FIGURE 4 is a functional block diagram illustrating a lamp controller board of the subject surgical lighting system;

FIGURE 5 is a flow chart illustrating a component auto-detect function executed by the subject control system;

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FIGURE 6 is a view of a user's screen displayed by the lighting control apparatus of the subject surgical lighting; and

FIGURE 7 is a view of the user's screen displaying a sub-menu provided by the lighting control apparatus of the subject system.

Detailed Description of the Preferred Embodiments

With reference now to the drawing figures wherein the showings are purposes of illustrating the preferred embodiments of the invention only and not for purposes of limiting same, FIGURE 1 shows a surgical lighting system 10 including a first set of lighting devices 12 supported from the ceiling 14 of an operating room by a primary spindle hub 16 and a second set of lighting devices 18 supported at the ceiling 14 by a secondary spindle hub 20. A lighting control apparatus 30 includes a master control unit 32 for operating the first set of lighting devices 12 and a second control unit 34 for controlling operation of the second set of lighting devices 18. A set of communication and power lines 36 connect the lighting control apparatus 30 with the first and second set of lighting devices 12, 18 for control thereof in a manner to be described in greater detail below.

The first set of lighting devices 12 supported by the primary spindle hub 16 includes three (3) overhead lightheads 40-44, a surgical task light 46 and an operating room ambient light 48. Each of the surgical lightheads 40-44 are carried on a corresponding suspension system 40'-44'. Similarly, the surgical task light is carried on a suspension arm 46'. Each of the suspension arms 40'-46' carry appropriate power and communication cables which will be described below and further enable movement of the lightheads 40-44 and of the task light 46 into selected positions relative to the operating room application. Each lighthead is provided with a set of manually operable light intensity control buttons 124, preferably located adjacent the lighthead handle of each device. The ambient light 48 is mounted in a fixed location relative to the primary spindle hub 16. A

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single auxiliary lighthouse 50 together with an auxiliary ambient light 52 is supported on the secondary spindle hub 20 by a suitable suspension arm 50'. It is to be appreciated that although several lighting devices are provided in the first set 12 and only a single lighting device is found in the second set 18, more or less lighting devices can be used as desired. Additionally, more or less spindle hubs 16, 20 can be included in the system as desired.

With reference next to FIGURE 2, the subject lighting system 10 is shown in functional block diagram form. It is to be appreciated that the system is partitioned to provide a high level of redundancy to prevent single point failures from causing a "black out" or no light condition. To that end, each surgical lighthouse includes a separate AC/DC power supply and further includes the capability to switch to a 24 VDC battery backup supply. Each surgical lighthouse is also provided with its own electronics controller and resident operational firmware which is executable in the lighthouse.

The lighthouses 40-44 and 50 each respectively include an electronics module 60-66 for executing programs in accordance with predetermined algorithms. Each of the lighthouses in the subject system are adapted to communicate with the lighting control apparatus 30 for controlling various lighting functions and to provide for plug and play capability. The communication and power lines 36 include separate lighthouse power cables 70-76 for delivering power from the lighting control apparatus 30 to the individual lighthouses. In addition, the communication and power lines 36 include a pair of communication cables 80, 82 for carrying command and status data between the lighting devices 12, 18 and the lighting control apparatus 30. To that end, the master control unit 32 includes an electronic controller board 90 for generating signals to be carried on the communication cables 80, 82 between the control unit and the lighthouses 40-44, 50 and task light 46.

With continued reference to FIGURE 2, it is to be noted that the embodiment of the subject surgical lighting system 10 includes a video camera 100. The video camera 100 is carried by

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the large lighthouse 44 as illustrated. The video signals from the camera 100 pass through the suspension arm 44' of the large lighthouse 44 and into a common hub electronics board 104 and into a video card component 106 of the electronic controller board 90 of the master control unit 32. The video card component 106 is adapted to generate a composite video signal 108 and an S-video signal 110.

FIGURES 3 and 4 show, in block diagram form, the functional components of the electronics module 64 of the large lighthouse 44. As shown in FIGURE 3, the electronics module 64 includes a lamp controller board 120, a camera module 122, a set of manually operable bulb intensity switches 124, a visual output lamp 126, preferably an LED, a bulb change mechanism 128 holding a primary 130 and a secondary 132 bulb, and a bulb change solenoid 134 for effecting bulb changes upon failure of the primary bulb 130. All of these components are in operative local communication with the lamp controller board 120. Operative communication with the lighting control apparatus 30 (Figs. 1 and 2) is provided by the set of communication and power lines 36 including a differential video signal line 140, a lamp serial port signal line 142 and a system power signal line 144. The differential video signal line 140 delivers video signals from the camera module 122 to the lighting control apparatus 30. The lamp serial communication lines 142, however, are bi-directional and carry commands and data between the electronics module 64 and the lighting control apparatus 30. The system power lines 144 communicate electrical power to the lighthouse.

Closed loop control is provided for lamp power. To that end, a bulb intensity controller 152 detects the current delivered to the bulb 130 and the voltage signal at the bulb terminal. A bulb feedback signal 154 is generated by the controller 152 and delivered to the microcontroller 150 or use in calculating a desired duty cycle for a PWM circuit 156. In this way, a consistent lighting effort is realized.

Further details of the lamp controller board 120 of the electronics module 64 is provided in FIGURE 4. As shown, a microcontroller 150 is in operative communication with all of the components previously identified above. The microcontroller 150 is adapted to communicate with the lighting control apparatus in accordance with program code stored on a memory portion of the microcontroller. More particularly, the microcontroller 150 is adapted to execute program code to carry out the plug and play capabilities of the subject surgical lighting system.

10 The control system provides several levels of redundancy in order to minimize the potential loss of control of the lighting system during surgical procedures. Either one of the two power supplies in the control center is sufficient to maintain operation of the microcontroller. If the microcontroller or switches in the
15 wall control unit fail, then ON/OFF and intensity control functionality can be performed using just the lighthead-based microcontroller and switches.

FIGURE 5 is a flowchart illustrating a device auto-detect sequence executed by the controller of the preferred
20 embodiment. At power on S10, the lighting control apparatus 30 interrogates each of the microcontrollers 150 and each of the lightheads in order to determine a software revision level S12 and the quantity of lightheads in the system S16, their size and style, and any other information that can be derived at power up. One
25 such determination is provided by a camera detect signal line 136 (Fig. 3) which is read by the microcontroller 150 of the lamp controller board 120 at power up. When a camera module 122 is installed in the electronics module 64, the camera detect signal line 136 is tied to a logical ground. In the absence of a camera
30 module, the camera detect signal line 136 is permitted to float and represents a logical high value.

The microcontroller 150 includes program code to report the status of the presence of a camera module 122 within the electronics module 64 of the lighthead 44. Other information is
35 also reported by the microcontroller 150 to the lighting control

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apparatus 30. This information includes data regarding the software version executed by the microcontroller 150. The subject surgical lighting system 10 uses this information beneficially to download new executable code to the microcontroller S14 when update
5 software versions become available. To that end, the new software is downloaded S14 from the lighting control apparatus 30 to the separate electronics modules 60-66 using the communication and power lines 36.

Based upon a determination of the installed components
10 S16, the controller selects an algorithm from among a group of algorithms for performing a control function. When a video camera is detected, a camera control algorithm is selected S18, a task light control algorithm and an ambient light control algorithm is selected at steps S20 and S22 when those devices are detected by
15 the controller within the system. With regard to the surgical lightheads, as noted above, a variety of sizes are supported by the system, each preferably controlled according to separately distinct and tuned algorithms. To that end, the lighthead type is determined at step S24 and a small lighthead control algorithm is
20 selected S26, a medium lighthead control algorithm is selected S28, and/or a large lighthead control algorithm is selected S30, based upon the lighthead type determination step S24.

FIGURE 6 shows a user's display 160 presented on the master control unit 32 of the lighting control apparatus 30 of the
25 subject surgical lighting system 10. Preferably, the master control unit includes a monochrome graphics LCD with backlight and a set of membrane contact switches 162. The contact switches 162 are used to obtain manual user input for controlling the subject surgical lighting system. An ON pushbutton 164 and an OFF push
30 button 166 are provided together with a set of other control buttons 168 positioned adjacent a display area 170 which is programmed to solicit input from the user. The display area 170 essentially provides visual information to the human user regarding the function of the adjacent buttons 168. The visual information

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is generated by the software in the control and is useful to redefine the function of the physical buttons as needed.

As shown in FIGURE 6, the display area 170 includes a "select light" indicia or label area, an "intensity" area, an "ambient light ON/OFF" area, a "camera" area, and a "system" area. An up arrow 172 and a down arrow 174 are provided among the other input buttons to select a lighthouse from among the group. Actuation of either the up or down input buttons 172, 174 causes an arrow 176 displayed on the user display 160 to transition between one of three selectable fields 178. In addition, an intensity decrease arrow 180 and an intensity increase arrow 182 are provided for enabling the user at the lighting control apparatus 30 to control the intensity of the particular lighthouse selected by the position of the arrow 176. As shown in FIGURE 6, lighthouse number 3 is selected by the arrow 176 and the intensity is set to level 3.

An ambient light power button 190 is also provided on the contact switches 162 together with an ambient light icon in the display area so that users can turn the ambient light 48 on or off as desired. A camera input button 192 is also provided adjacent a camera icon in the display area 170 for toggling camera operation. Lastly, a system inquiry button 194 is included for users to query the surgical lighting system for information.

A lighthouse is selected using the UP/DOWN buttons 172, 174 under the SELECT LIGHT display, the intensity is adjusted with the LEFT/RIGHT buttons 180, 182 under the INTENSITY display. Seven (7) predefined power levels are hard coded into a non-volatile memory in the lighthouse for each of the seven light intensity levels. The power level definitions for various wattage lamp types are stored in a set of power level tables in the lighthouses. The intensity indicators 200-208 shown in FIGURE 6, consist of a lamp head number 210 followed by a progressive, seven bar segment display 212. When the lamp is off, no segments are displayed. When the lamp is at a maximum intensity level, all seven segments are displayed. As shown in the FIGURE, lamp 1 is at full power, lamp 2 is off, lamp 3 is at a low power setting, and lamp 4 is

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slightly brighter than lamp 3. As the user increases lamp intensity, successive segments are displayed from left to right with all preceding segments remaining on.

When two or more lightheads are detected in the system, the ALL LIGHTS indicator 214, shown in the FIGURE are displayed on the light control screen. When the ALL LIGHTS indicator is selected using the UP/DOWN buttons 172, 174 under the SELECT LIGHT display, the control and intensity of all detected lightheads follows a predefined operational sequence. Essentially, when the ALL LIGHTS indicator is selected and the intensity right 182 or up button is selected, all lamps immediately increase to the next higher level of intensity. Conversely, when the left 180 or down arrow is pressed, all lamps in the system immediately decrease in intensity to the next lower level.

Primary and secondary lamps for the lighthead are designated as "A" and "B" with the "A" being understood as the primary lamp location. In the system of the preferred embodiment as noted above, the lamps are continuously monitored regardless of whether they are turned ON or OFF. When a lamp is missing or burned out, a lamp fault indicator 220 is displayed and flashes on and off at a preselected rate, preferably a two second rate with a fifty percent duty cycle.

With continued reference to the drawing figures, the system automatically detects the installation of a manual task light as described above. To that end, a task light intensity display 208 is provided together with a lamp life indicator 230. The intensity indicator consists of a seven segment display 212 in the form of a bar graph similar to the display provided for the lightheads. As the user increases lamp intensity, successive segments are displayed from left to right with all preceding segments remaining on.

In addition, a task light lamp life indicator 230 is presented to the operator to indicate the remaining life on the lamp used in the manual task light. A progress bar meter 232 moves to the right as shown in the drawing figure as lamp light diminishes. The bar is calibrated preferably for 0 hours on the

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left and 500 hours full scale on the right. After the bar graph reaches 400 hours of bulb life, the progress bar begins to flash at a predetermined rate, preferably a two second rate with a fifty percent duty cycle. After 500 hours are reached, a graphical display of a lamp with a cross therethrough is indicated and begins flashing to attract the attention of the operator. At 500 hours, a fault log entry is made which indicates that the number of lamp hours used in the manual task light has exceeded a predetermined operational limit.

10 In addition, a backup battery display icon is presented to display the remaining life of the backup battery.

FIGURE 7 shows a sub-menu 250 presented by the subject control system when the button below the "camera" icon 234 (FIG. 6) is operated. As shown, select function keys 172, 174 are used to
15 change the position of an arrow 176 to select various camera control options including power 252, zoom 254, rotate 256, a brightness adjustment 258, and a camera focus 260.

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Having thus described the preferred embodiments, the invention is now claimed to be:

1. A surgical light system (10) comprising:
5 a lighthead (44) coupled to a suspension arm (41') adapted for mounting to a surface (14) of a surgical room;
a bulb (130) in said lighthead;
a processor (120) in said lighthead operatively coupled with the bulb for controlling an intensity of light of the bulb and
10 being adapted to generate a lighthead status signal representative of a first status of said lighthead; and,
a control apparatus (32, 34) in operative communication with said processor in said lighthead, the control apparatus receiving said lighthead status signal and selecting a set of control
15 algorithms from among a group of algorithms based on said lighthead status signal for controlling said lighthead.

2. The surgical light system according to claim 1 wherein said first status of said lighthead includes a least a one of:
a size of said lighthead;
an intensity (154) of light from said bulb;
5 a condition of said bulb;
a level of current (150) applied to said bulb;
a level of voltage (150) applied to said bulb;
an internal temperature of said lighthead;
a presence of a vide camera;
10 a presence of a manual surgical task light; and,
a presence of a controllable ambient light.

3. The surgical light system (10) according to claim 2 wherein:
said control apparatus (32, 34) is adapted to generate a query signal; and,
5 the processor (120) is adapted to generate said lighthead status signal in response to receiving said query signal.

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- 15 -

4. The surgical light system (10) according to claim 3 further including a serial data communication link (36, 80, 82) for carrying said query signal and said lighthouse status signal between said processor and said control apparatus.

5. The surgical light system (10) according to claim 4 wherein said control apparatus (32, 34) includes an LCD display (160) for displaying said first status.

6. The surgical light system (10) according to claim 1 wherein:

the control apparatus is adapted to generate a command signal; and,

5 the processor in the lighthouse is adapted to control the intensity of light in accordance with the command signal.

7. The surgical light system according to claim 1 wherein said processor in said lighthouse is adapted to:

receive program code from said control apparatus; and, execute said program code.

8. The surgical light system according to claim 7 wherein said control apparatus is adapted to determine an operational compatibility of said processor in said surgical light system based on said lighthouse status signal received; and,

5 when the processor is not compatible for use in the surgical light system, download said executable program code to the processor.

9. The surgical light system according to claim 1 further including a camera associated with said lighthouse and operatively coupled with said control apparatus, the camera generating an image signal adapted for conversion by an associated video monitor device
5 to a human readable image, the control apparatus including means for controlling functions of said camera including white balance, picture freeze, time display, and date display.

- 16 -

10. The surgical light system according to claim 9 wherein the control apparatus is adapted to detect a presence of said camera and route said image signal to a port on the control apparatus adapted for connection to the associated video monitor device.

11. The surgical light system according to claim 1 further including:

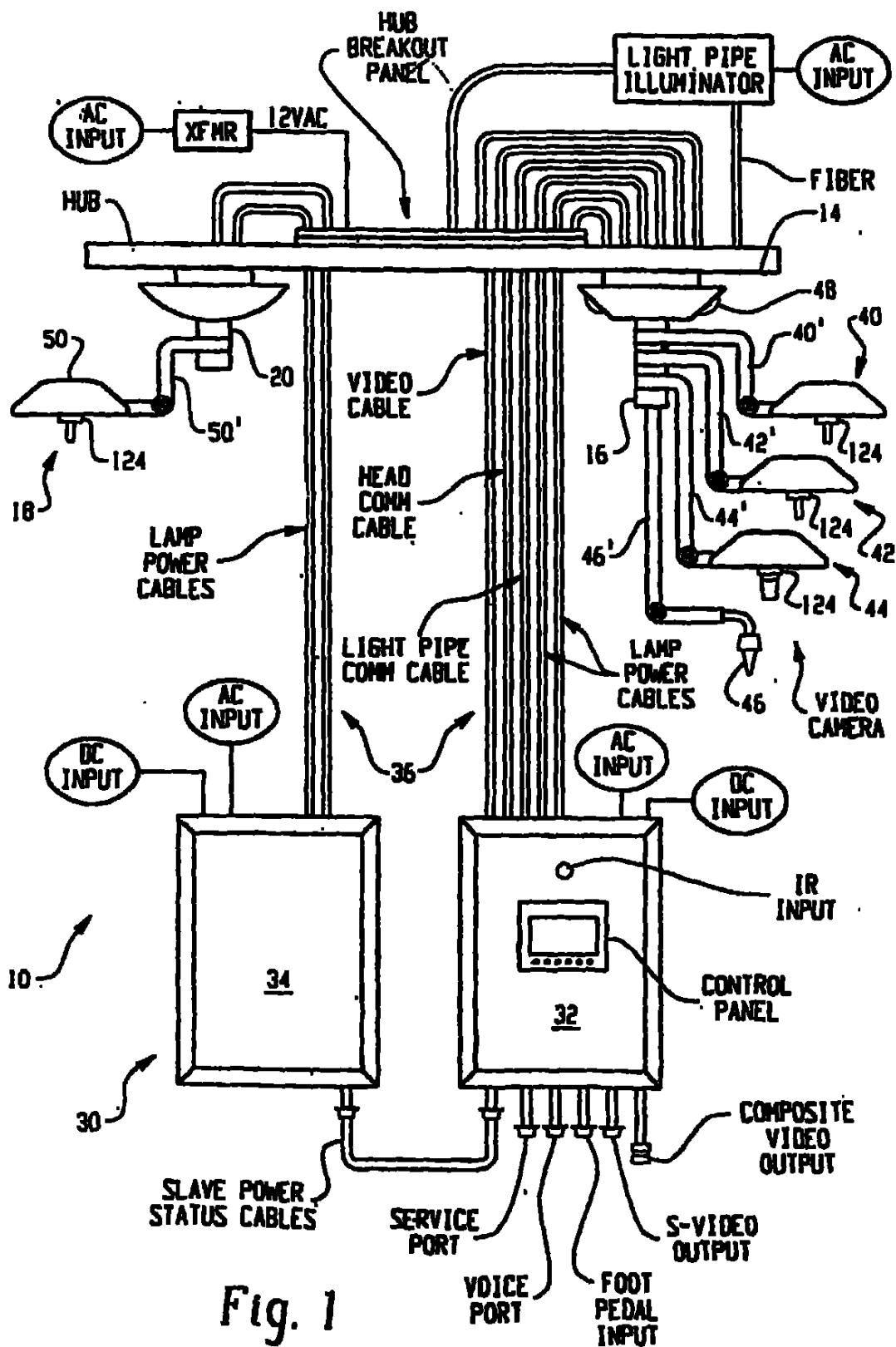
a first light intensity control button on said lighthead and a second light intensity control button on said control apparatus, said processor being responsive to both said first and second light intensity control buttons.

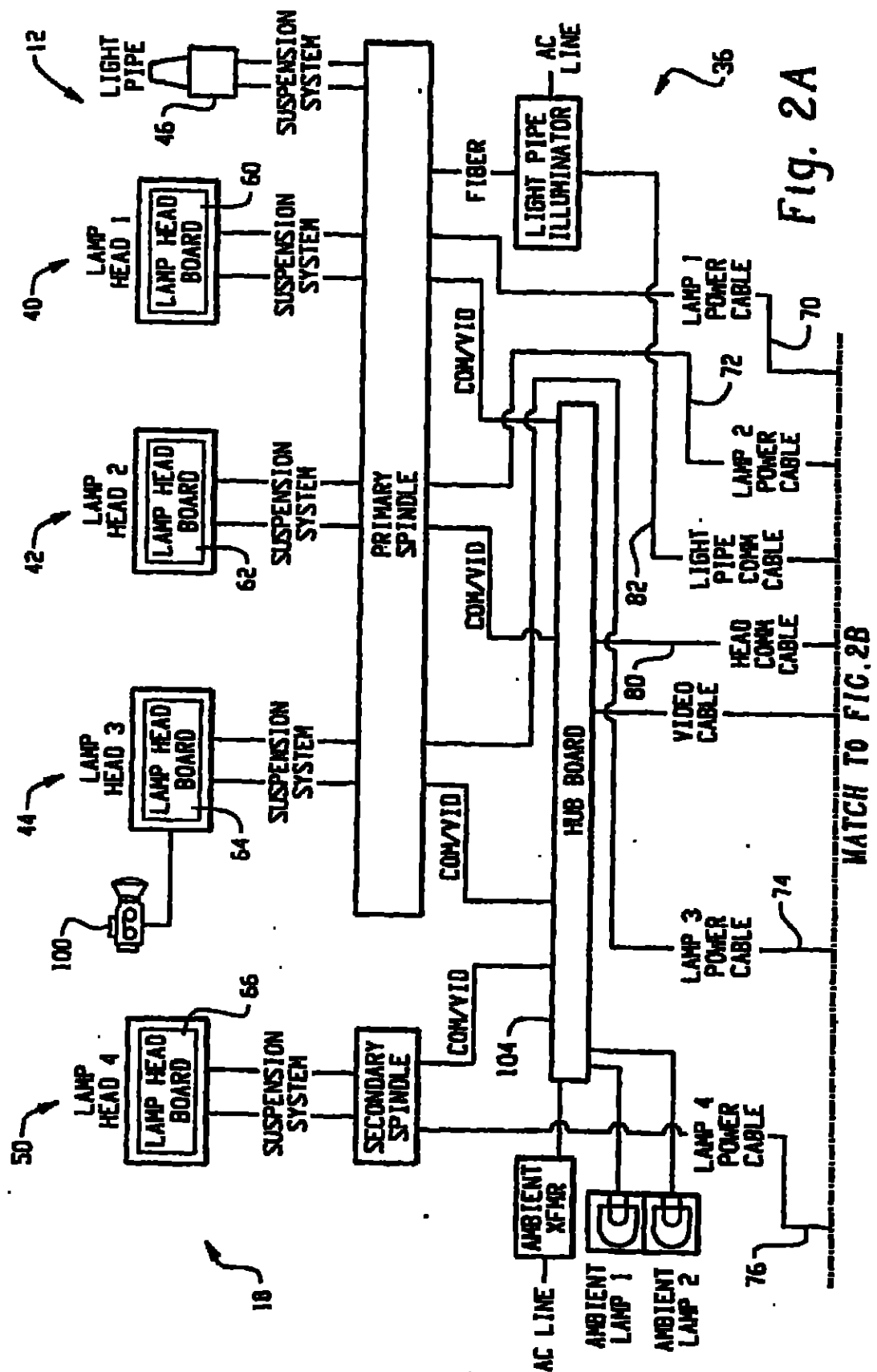
12. The surgical light system according to claim 1 further including a surgical video camera device (100) adapted to generate a video signal, wherein:

said processor (120) in said lighthead is adapted to generate a video camera present signal; and,

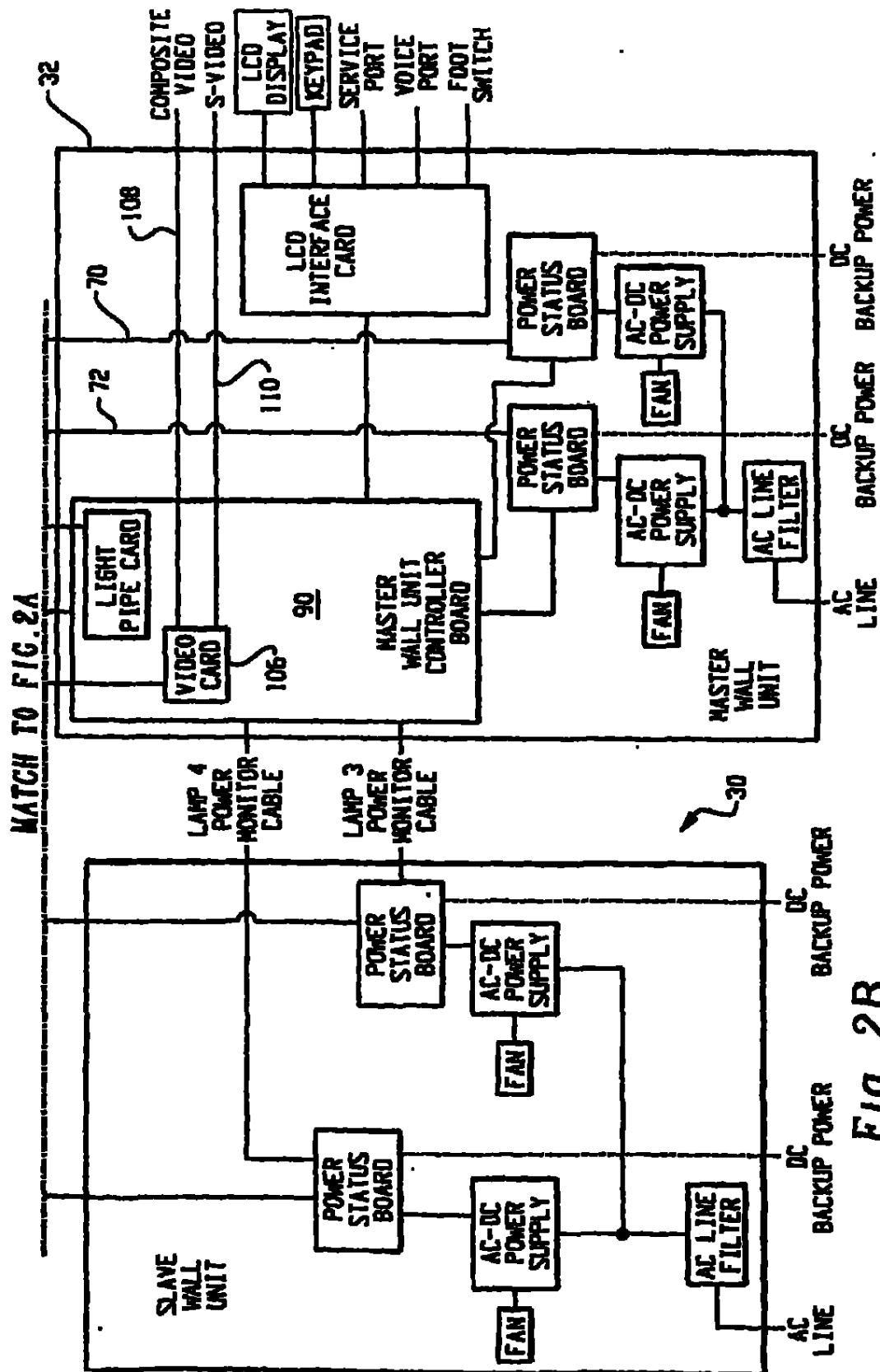
said central apparatus (32, 34) is adapted to receive the video camera present signal and select a camera control algorithm from said group of algorithms for controlling said surgical video camera device (100).

13. The surgical light system according to claim 12 further including a human readable display (160) for displaying information relating to said lighthead status signal and to said video camera device.





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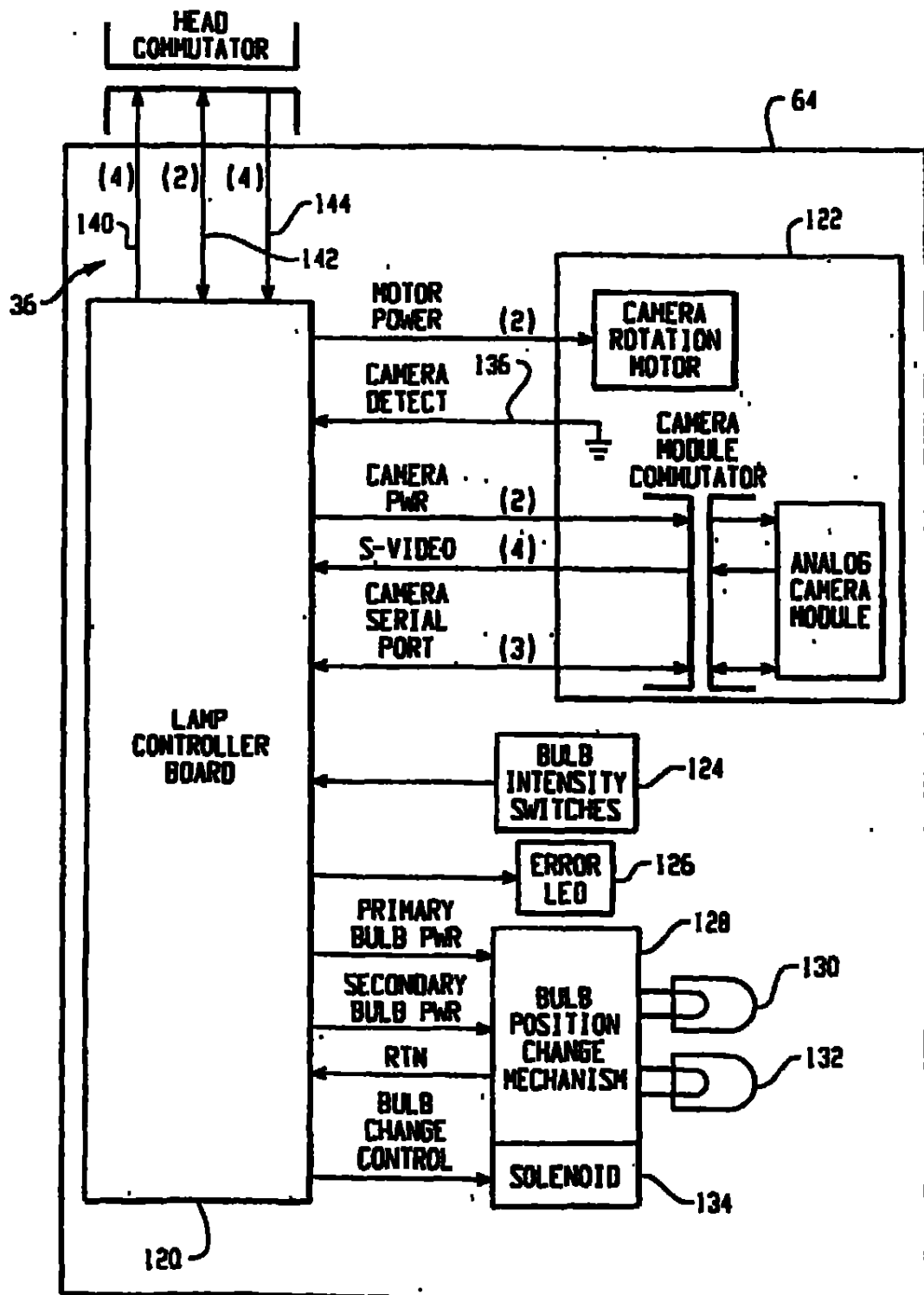


Fig. 3

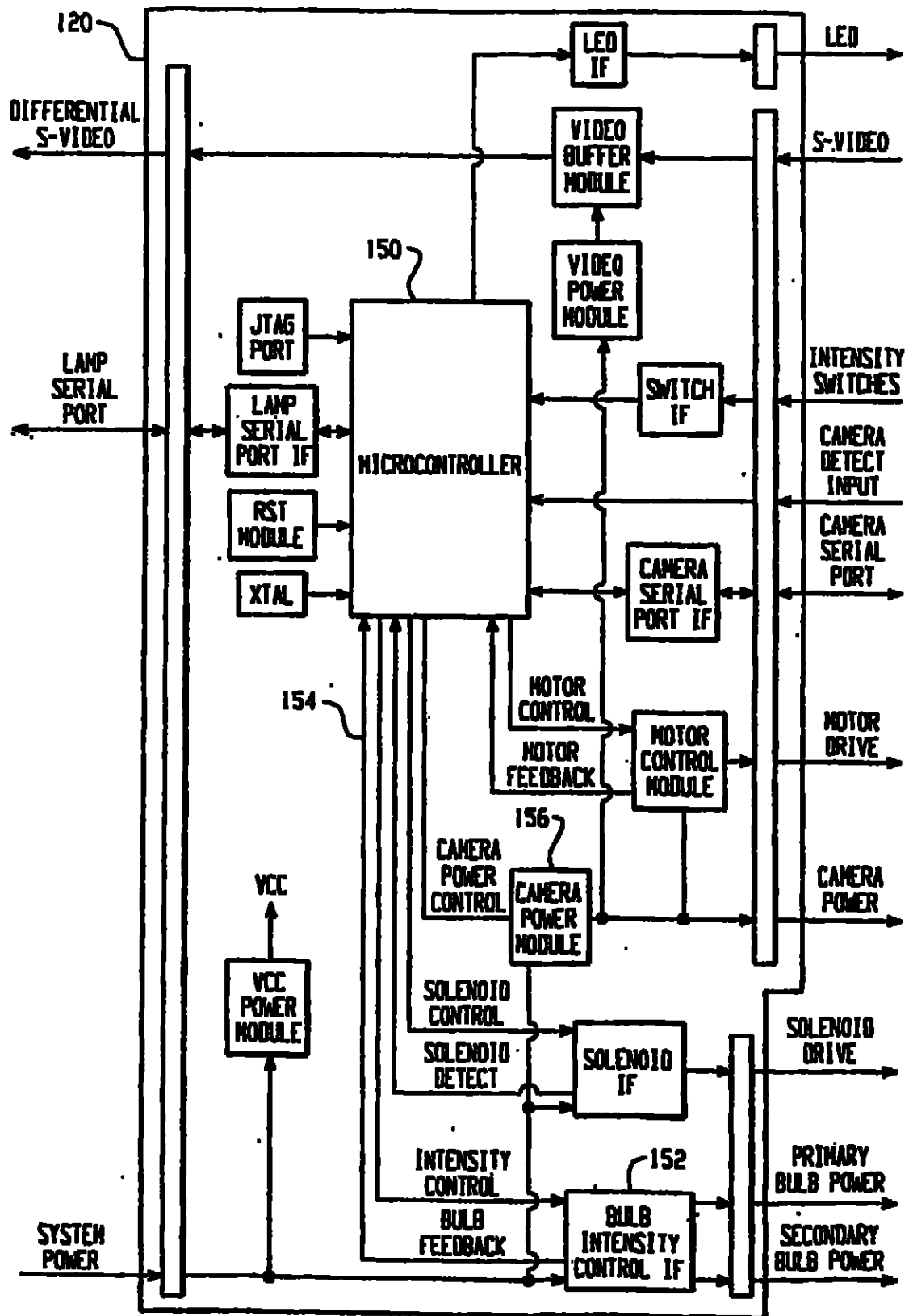


Fig. 4

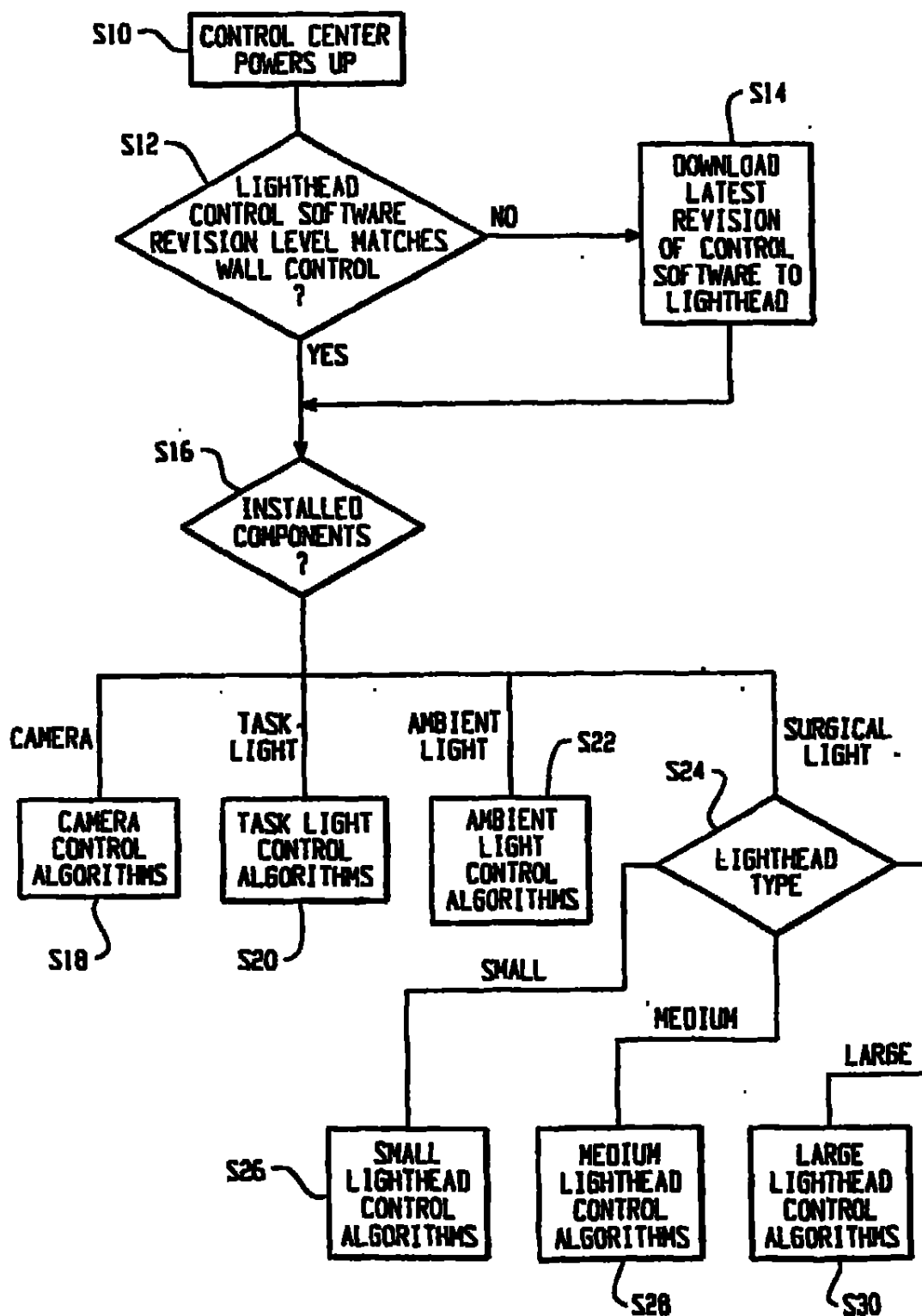


Fig. 5

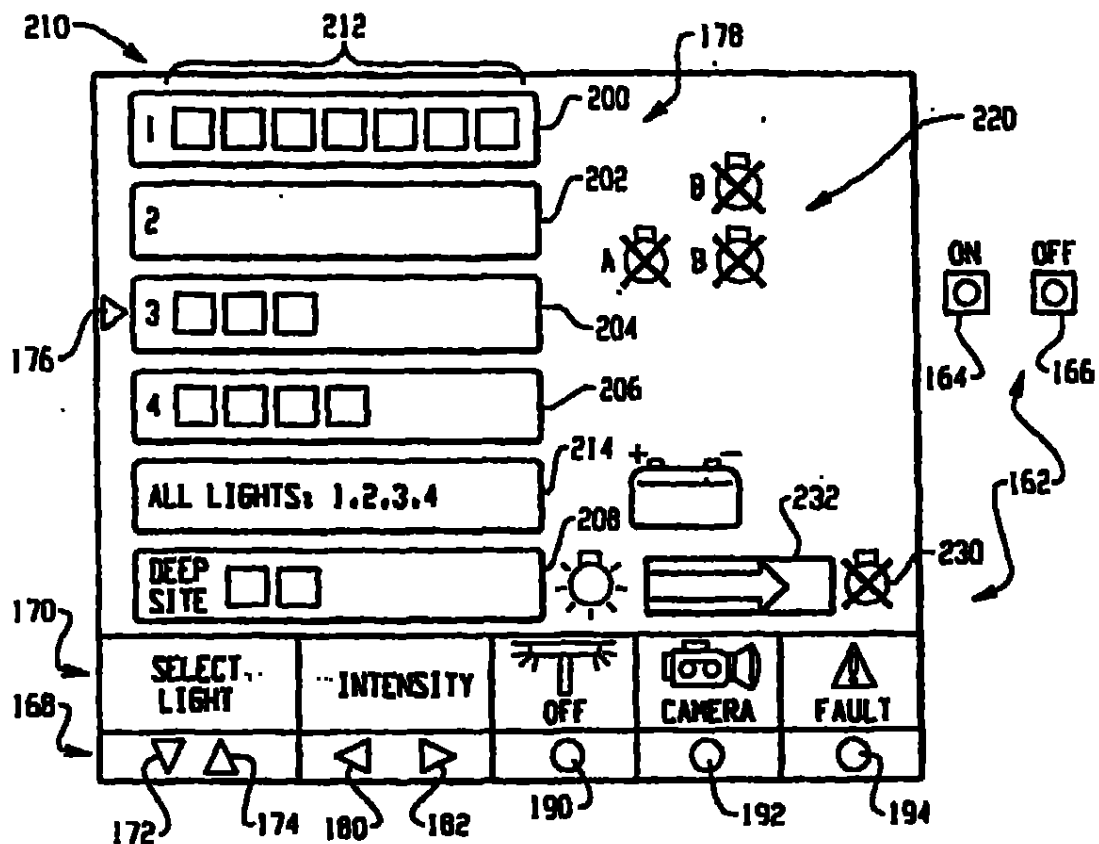


Fig. 6

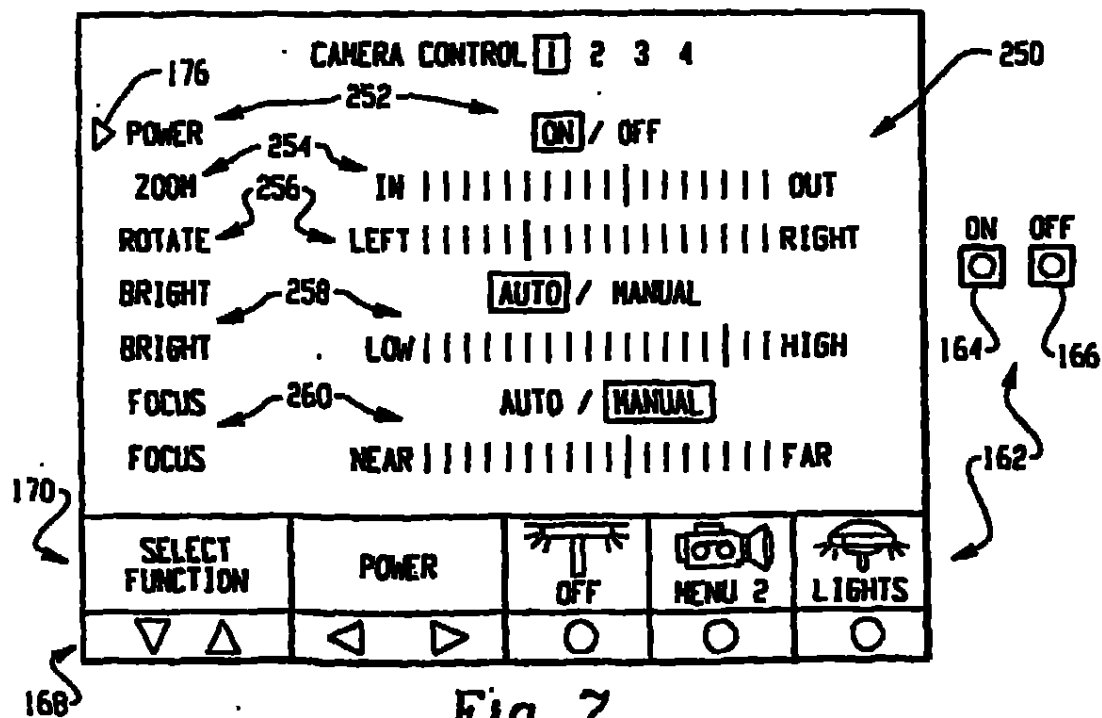


Fig. 7

INTERNATIONAL SEARCH REPORT

 Internu I Application No
 PCT/US 03/01138

 A. CLASSIFICATION OF SUBJECT MATTER
 IPC 7 H05B37/03 H05B37/02 A61B19/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H05B A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DE 196 11 161 A (AEG EWS STROMVERSORGUNGEN SOER) 25 September 1997 (1997-09-25) the whole document	1-13
Y	US 6 160 582 A (HILL WOLFRAM) 12 December 2000 (2000-12-12) the whole document	1-13
A	GB 2 176 640 A (HARDY RAYMOND BRUCE MCCLELLAND; JOHN MERVYN THOMAS) 31 December 1986 (1986-12-31) the whole document	1-7, 9, 11
A	US 6 132 062 A (BORDERS RICHARD L ET AL) 17 October 2000 (2000-10-17) column 3, line 41-55	1
	-/-	

☒ Further documents are filed in the continuation of box C.☒ Patent family members are listed in annex.

* Special categories of cited documents:

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

L document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

O document referring to an oral disclosure, use, exhibition or other means

P document published prior to the international filing date but later than the priority date claimed

T later document published after the international filing date of priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

B document member of the same patent family

Date of the actual completion of the international search

8 December 2003

Date of mailing of the international search report

22/12/2003

Name and mailing address of the ISA

 European Patent Office, P.O. Box 5818 Patentamt 2
 NL - 2280 HV Rijswijk
 Tel (+31-70) 340-8040, Tx. 31 651 601
 Fax: (+31-70) 340-8018

Authorized officer

Maicas, J

INTERNATIONAL SEARCH REPORT

 Internu Application No
 PCT/US 03/01138

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 19611161	A	25-09-1997	DE 19611161 A1	25-09-1997
US 6160582	A	12-12-2000	DE 19803494 A1 DE 59808811 D1 EP 0933973 A2	05-08-1999 31-07-2003 04-08-1999
GB 2176640	A	31-12-1986	NONE	
US 6132062	A	17-10-2000	AU 3101099 A BR 9909111 A CA 2325543 A1 EP 1064495 A1 JP 2002510134 T TW 490543 B WO 9950591 A1 AU 3098799 A AU 3193099 A AU 3358699 A AU 3452199 A BR 9909008 A BR 9909112 A BR 9909185 A BR 9909186 A CA 2311563 A1 CA 2325532 A1 CA 2325999 A1 CA 2326170 A1 EP 1064494 A1 EP 1070218 A1 EP 1084364 A2 EP 1068472 A1 JP 2002510133 T JP 2002537628 T JP 2002510135 T JP 2002510137 T TW 490545 B TW 475978 B TW 490544 B US 6176597 B1 US 6443596 B1 US 6402351 B1 US 2002089857 A1 WO 9950590 A1 WO 9950598 A1 WO 9950592 A1 WO 9950593 A2 US 2002172033 A1	18-10-1999 12-12-2000 07-10-1999 03-01-2001 02-04-2002 11-06-2002 07-10-1999 18-10-1999 18-10-1999 18-10-1999 18-10-1999 28-11-2000 12-12-2000 04-09-2001 05-12-2000 07-10-1999 07-10-1999 07-10-1999 07-10-1999 03-01-2001 24-01-2001 21-03-2001 17-01-2001 02-04-2002 05-11-2002 02-04-2002 02-04-2002 11-06-2002 11-02-2002 11-06-2002 23-01-2001 03-09-2002 11-06-2002 11-07-2002 07-10-1999 07-10-1999 07-10-1999 07-10-1999 21-11-2002
US 5803905	A	08-09-1998	NONE	
US 5061997	A	29-10-1991	NONE	
US 5526245	A	11-06-1996	NONE	
EP 1107422	A	13-06-2001	DE 29921180 U1 DE 10010139 A1 EP 1107422 A2 JP 2001217087 A	07-09-2000 13-06-2001 13-06-2001 10-08-2001

DEC 23 2003

From the INTERNATIONAL SEARCHING AUTHORITY

PCT

FAY, SHARPE, BEALL, FAGAN,
MINNICH & MCKEE

To:

FAY, SHARPE, FAGAN, MINNICH
& MCKEE, LLP
Attn. Kocovsky, Thomas E.
1100 Superior Avenue
Seventh Floor
Cleveland, OH 44114
UNITED STATES OF AMERICA

NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL SEARCH REPORT
OR THE DECLARATION

(PCT Rule 44.1)

Date of mailing (day/month/year)	22/12/2003
Applicant's or agent's file reference MEDZ 201246# PCT	FOR FURTHER ACTION See paragraphs 1 and 4 below
International application No. PCT/US 03/01138	International filing date (day/month/year) 15/01/2003
Applicant STERIS INC.	

1. ☒ The applicant is hereby notified that the International Search Report has been established and is transmitted herewith.

Filing of amendments and statement under Article 18:

The applicant is entitled, if he so wishes, to amend the claims of the International Application (see Rule 46):

When? The time limit for filing such amendments is normally 2 months from the date of transmittal of the International Search Report; however, for more details, see the notes on the accompanying sheet.

Where? Directly to the International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland
Facsimile No.: (41-22) 740.14.35

For more detailed instructions, see the notes on the accompanying sheet.

2. ☐ The applicant is hereby notified that no International Search Report will be established and that the declaration under Article 17(2)(a) to that effect is transmitted herewith.

3. ☐ With regard to the protest against payment of (an) additional fee(s) under Rule 40.2, the applicant is notified that:

☐ the protest together with the decision thereon has been transmitted to the International Bureau together with the applicant's request to forward the texts of both the protest and the decision thereon to the designated Offices.

☐ no decision has been made yet on the protest; the applicant will be notified as soon as a decision is made.

4. Further action(s): The applicant is reminded of the following:

Shortly after 18 months from the priority date, the International application will be published by the International Bureau. If the applicant wishes to avoid or postpone publication, a notice of withdrawal of the International application, or of the priority claim, must reach the International Bureau as provided in Rules 90bis.1 and 90bis.3, respectively, before the completion of the technical preparations for International publication.

Within 18 months from the priority date, a demand for International preliminary examination must be filed if the applicant wishes to postpone the entry into the national phase until 30 months from the priority date (in some Offices even later).

Within 20 months from the priority date, the applicant must perform the prescribed acts for entry into the national phase before all designated Offices which have not been elected in the demand or in a later election within 18 months from the priority date or could not be elected because they are not bound by Chapter II.

Name and mailing address of the International Searching Authority



European Patent Office, P.B. 5818 Patentaan 2
NL-2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Tanja Touysserkani

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference WEDZ 201246U	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/US 03/ 01138	International filing date (day/month/year) 15/01/2003	(Earliest) Priority Date (day/month/year) 15/01/2002
Applicant STERIS INC.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 05 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the language, the international search was carried out on the basis of the international application in the language in which it was filed; unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international search was carried out on the basis of the sequence listing:

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

2. ☐ Certain claims were found unsearchable (See Box I).

3. ☐ Unity of invention is lacking (see Box II).

4. With regard to the title,

☐ the text is approved as submitted by the applicant.

☒ the text has been established by this Authority to read as follows:

SURGICAL LIGHTING CONTROL WITH VIDEO SYSTEM

5. With regard to the abstract,

☐ the text is approved as submitted by the applicant.

☒ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the drawings to be published with the abstract is Figure No.

☒ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

1
☐ None of the figures.

Box III TEXT OF THE ABSTRACT (Continuation of Item 5 of the first sheet)

A surgical light system (10) includes a lighthouse (44) coupled to a suspension arm (41') adapted for mounting to a surface (14) of a surgical room. A bulb (130) is disposed in the lighthouse. A processor (120) in the lighthouse is operatively coupled with the bulb for controlling an intensity of light of the bulb and is adapted to generate a lighthouse status signal representative of a first status of the lighthouse. A control apparatus (32, 34) is in operative communication with the processor (120) in the lighthouse. The control apparatus receives the lighthouse status signal and selects a set of control algorithms from among a group of algorithms based on the lighthouse status signal for controlling the lighthouse. The lighthouse status signal includes information regarding a size of the lighthouse, an intensity of light from the bulb, a condition of the bulb, a level of current applied to the bulb, a level of voltage applied to the bulb, an internal temperature of the lighthouse, and the presence of one or more of a video camera, a surgical task light, and a controllable ambient light. A human-readable display device (160) is provided for displaying information relating to the lighthouse status signal. Several levels of redundancy are provided in the control system to minimize the potential loss of control due to failures. In that regard, the lighthouses are operable when the control apparatus (32, 34) fails.

CERTIFICATE OF FAX TRANSMISSION

I hereby certify that this Response to International Search Report is being facsimile transmitted to:
European Patent Office, International Searching Authority at [011 31 70 340 3016]
on this 17th day of February, 2004.

By Barbara Brazier
Barbara Brazier

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	)	Officer: J. Malcas
STERIS INC.	)	
Appln. No.: PCT/US03/01138	)	Date of International Search Report:
Filed: 15 January 2003	)	Completion: 08 December 2003
	)	Mailing: 22 December 2003
For: SURGICAL LIGHTING CONTROL	)	
AND VIDEO SYSTEM	)	
Atty. Docket No.:	)	Cleveland, Ohio 44114
MEDZ 2 01246 PCT	)	February 12, 2004

RESPONSE TO INTERNATIONAL SEARCH REPORT

International Searching Authority
European Patent Office
P.B. 5818 Patentlaan 2
NL-2280 HV Rijswijk

Dear Sir:

This paper is responsive to the International Search Report of December 8, 2003 and mailed on December 22, 2003.

In the International Search Report identified above, new text for the Title and Abstract was established by authority of the International Searching Authority (ISA). Also, drawing Figure 1 suggested by application for publishing with the Abstract was approved by the ISA.

Applicants respectfully confirm and approve the Title and Abstract text established by the authority of the ISA.

Next in the Search Report, a pair of documents were noted as being of particular relevance to the claimed invention. More particularly, German Patent 'DE 196 11 161 in combination with U.S. Patent No. 6,160,582 were noted as being particularly relevant to all pending claims (claims 1-13).

The German '161 patent included with the Search Report is not in the English language but a translation of the Abstract is available on-line. It appears that a computer PC is connected to several security lamp devices 15, 16, and 17 with a battery backup using a network-like arrangement (Fig. 2). The U.S. '582 patent cited in the International Search Report shows an "operating unit" 44 connected to a surgical lighthead 10 through intermediary modulator and demodulator means 40, 42. Essentially, the '582 patent seems to teach the notion of modulating control signals generated by a control unit 44 for controlling a light 26, a microphone 46, camera 34, and light pointer 48 in a surgical lighthead 10. As

set out on column 5 of the '582 patent, the modulated control signals are less sensitive to interference as compared to the prior art analog and/or direct current signals.

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In response to the Search Report, applicant respectfully submits that independent claim 1 recites several limitations which are not taught or suggested in the prior art of record. More particularly, independent claim 1 recites a surgical light system comprising a lighthouse, a bulb, a processor in the lighthouse, and a control apparatus in operative communication with the processor. The processor controls an intensity of light of the bulb and is adapted to generate a lighthouse status signal representative of a first status of the lighthouse. The control apparatus receives the lighthouse status signal and selects a set of control algorithms from among a group of algorithms based on the lighthouse status signal for controlling the lighthouse. It is respectfully submitted that none of the art teaches or suggests at least the limitation of selecting a set of control algorithms from among a group of algorithms based on a lighthouse status signal received into a control apparatus from a processor disposed in a surgical lighthouse.

The applicant hereby requests a detailed Substantive Examination of the above-referenced patent application in view of the comments set out above.

An early indication that all claims meet the requirements for novelty, inventive step, and industrial applicability is respectfully requested.

Respectfully submitted,

FAY, SHARPE, FAGAN,
MINNICH & MCKEE, LLP



Michael E. Hudzinski, Reg. No. 34,185
1100 Superior Avenue, 7th Floor
Cleveland, OH 44114-2518
216/861-5582

PATENT COOPERATION TREATY

37

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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APR 19 2004

FAY, SHARPE, FAGAN,
MINNICH & MCKEE, LLP

NOTIFICATION OF TRANSMITTAL OF THE INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

To:

KOCOVSKY, Thomas E., Jr., Esq.
FAY, SHARPE, FAGAN, MINNICH
& MCKEE, LLP
1100 Superior Avenue
Seventh Floor
Cleveland, OH 44114
ETATS-UNIS D'AMERIQUE

Date of mailing (day/month/year)	15.04.2004
-------------------------------------	------------

Applicant's or agent's file reference MEDZ201248PCT		IMPORTANT NOTIFICATION
International application No. PCT/US 03/01138	International filing date (day/month/year) 15.01.2003	Priority date (day/month/year) 15.01.2002
Applicant STERIS INC.		

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed inventions is patentable or not" (see also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the international
preliminary examining authority:



European Patent Office
D-80298 Munich
Tel. +49 89 2399 - 0 Tlx 523858 epmu d
Fax: +49 89 2399 - 4465

Authorized Officer

Biermaier, R

Tel. +49 89 2399-245

DOCKETED



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference MEDZ201248PCT		FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEAA/10)	
International application No. PCT/US 03/01138	International filing date (day/month/year) 15.01.2003	Priority date (day/month/year) 15.01.2002	
International Patent Classification (IPC) or both national classification and IPC H05B37/03, H05B37/03			
Applicant STERIS INC.			
1. This International preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36. 2. This REPORT consists of a total of 5 sheets, including this cover sheet. ☐ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 807 of the Administrative Instructions under the PCT). These annexes consist of a total of sheets.			
3. This report contains indications relating to the following items: I ☒ Basis of the opinion II ☐ Priority III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV ☐ Lack of unity of invention V ☒ Reasoned statement under Rule 86.2(a)(II) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI ☐ Certain documents cited VII ☐ Certain defects in the international application VIII ☐ Certain observations on the international application			
Date of submission of the demand 13.08.2003		Date of completion of this report 15.04.2004	
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tlx 523656 epmu d Fax: +49 89 2399 - 4465		Authorized Officer Telephone No. +49 89 2399- 	

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/US 03/01138**

I. Basis of the report

1. With regard to the elements of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17):*

Description, Pages

1-13 as originally filed

Claims, Numbers

1-13 as originally filed

Drawings, Sheets

1/7-7/7 as originally filed

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

40

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International application No. **PCT/US 03/01138**

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	7-8
	No: Claims	1-6 9-13
Inventive step (IS)	Yes: Claims	
	No: Claims	7-8
Industrial applicability (IA)	Yes: Claims	1-13
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item I : Basis of the opinion

- No further remark.

Re Item III : Non-establishment of opinion with regard to novelty, inventive step and Industrial applicability

- No further remark.

Re Item IV : Lack of unity of invention

- No further remark.

Re Item V : Reasoned statement under Rule 66.2(a)(II) with regard to novelty, inventive step or Industrial applicability; citations and explanations supporting such statement

1 The following prior art document is referred to in this report:

D1: US-A-6 160 582 (HILL WOLFRAM) 12 December 2000

2 Document D1 is considered to represent the most relevant state of the art.

2.1 D1 discloses a surgical light system comprising:

a) a lighthouse 10 coupled to a suspension arm 14 adapted for mounting to a surface 13 of a surgical room;

b) a bulb 26 in said lighthouse 10;

c) a processor 40 in said lighthouse 10 operatively coupled with the bulb 26 for controlling an intensity of light of the bulb 26 (cf. col.3, lines 60-64) and being adapted to generate a lighthouse status signal representative of a first status of said lighthouse (cf. col.5, lines 4-7);

d) a control apparatus 44 in operative communication with said processor 40 in said lighthouse 10;

e) the control apparatus 44 receiving said lighthouse status signal and,

f) selecting a set of control algorithms from among a group of algorithms based on said lighthouse status signal for controlling said lighthouse 10.

2.2 Remark concerning features "f" above:

In a surgical light system as described in D1, although not explicitly mentioned, the control apparatus 44 must incorporate a number of control algorithms which will allow the system react in front of the feedback received from the lighthouse (for example: activation of a reserve lamp, operations involving the use of a laser 48, illumination level controlled in a stepless manner, as can be seen in columns 3 and 4 of D1).

Therefore, the features "f" are also disclosed, even implicitly, in D1, so that the subject matter of claim 1 is not new and does not fulfill the requirements of Article 33(2) PCT.

3 As for the dependent claims:

3.1 The subject matter of claims 2-6 is not new because their additional features are also disclosed explicitly or implicitly by D1 (Art. 33(2) PCT).

3.2 The subject matter of claims 7 and 8 does not involve an inventive because their additional features are rendered obvious in the context of the knowledge of the skilled person (they describe a plug-and-play device) (Art. 33(3) PCT).

3.3 The subject matter of claims 9-13 is not new because their additional features are also disclosed explicitly or implicitly by D1 (Art. 33(2) PCT).

4 Independent claim 1 is not in the two part form (Rule 6.3 PCT).

5 The relevant document D1, cited above, is not mentioned in the description, contrary to the requirements of Rule 5.1(a) PCT.

6 The subject-matter according to claims 1 to 13 is industrially applicable (Art. 33(4) PCT).

Traducción

TRATADO DE COOPERACIÓN DE PATENTES

PCT

INFORME DE EXAMEN PRELIMINAR INTERNACIONAL
(Artículo 36 y Regla 70 del PCT)

43

Referencia del expediente del agente o solicitante MEDZ201248PCT	PARA ACTUACIONES ADICIONALES Ver notificación de Transmisión del Reporte de Examen Preliminar (Formato PCT/IPEA416)	
Solicitud Internacional No. PCT/US03/01138	Fecha de presentación internacional (día/mes/año) 15/01/2003	Fecha de prioridad (día/mes/año) 15/01/2002
Clasificación Internacional de Patentes (IPC) o clasificación nacional e IPC H05B 37/03, H05B 37/03		
Solicitante STERIS, INC.		

1. Este informe de examen preliminar internacional ha sido preparado por esta Administración encargada del Examen Preliminar Internacional y se envía al solicitante en concordancia con el artículo 36.

2. Este INFORME consta de una total de 5 hojas, incluyendo la portada

☐ Este informe también se acompaña de ANEXOS, esto es documentos de la descripción, reivindicaciones y/o dibujos que han sido corregidos y que son la base de este informe y/o documentos que contienen rectificaciones realizadas ante esta Administración (Ver Regla 70.16 y Sección 807 de las Instrucciones Administrativas según el PCT)

Estos anexos constan de un total de _____ hojas.

3. Este informe contiene indicaciones relativas a los siguientes aspectos:

I ☒ Fundamentos del Informe

II ☐ Prioridad

III ☐ No se establece concepto relativo a la novedad, nivel inventivo y aplicación industrial

IV ☐ Carencia de unidad de la invención

V ☒ Declaración razonada según el artículo 35(2), en relación con la novedad, nivel inventivo o aplicación industrial; citaciones y explicaciones que soportan dicha declaración

VI ☐ Ciertos documentos citados

VII ☐ Ciertos defectos de la solicitud Internacional

VIII ☐ Ciertas observaciones respecto a la solicitud Internacional

Fecha de presentación de la demanda 13/08/2003	Fecha de terminación de este reporte 15/04/2004
Nombre y dirección de correo de la autoridad encargada del examen preliminar Oficina Europea de Patentes D-80298 Munich Tel. +49 89 2369-0 Tlx 523656 epmu d Fax: +49 89 2369-4465	Funcionario Autorizado Teléfono No. +49 89 2369-

2/3

I. Base del Informe

1. Respecto a los elementos de la solicitud internacional (Las hojas de reemplazo que han sido entregadas a la Oficina receptora en respuesta a la invitación bajo el Artículo 14 se refieren en este informe como "originalmente presentadas" y no se anexan a este informe ya que ellas no contienen modificaciones (Regla 70.16 y 70.17)):

- ☒ La descripción:
páginas 1 – 13, como se presentaron originalmente
- ☒ Las reivindicaciones:
páginas 1 – 13, como se presentaron originalmente
- ☒ Los dibujos:
páginas 1/7 – 7/7, como se presentaron originalmente

2. Respecto al lenguaje, todos los elementos marcados anteriormente estuvieron disponibles o fueron enviados a la Administración en el lenguaje en que se presentó la solicitud internacional, a menos que se indique otra cosa en este punto.

Estos elementos estuvieron disponibles o fueron enviados a esta Administración en el siguiente lenguaje _____ el cual es:

- ☐ el lenguaje de la traducción enviada para propósitos de la búsqueda internacional (bajo Regla 23.1 (b)).
- ☐ el lenguaje de la publicación de la solicitud internacional (bajo Regla 48.3(b)).
- ☐ el lenguaje de la traducción entregada con propósitos del examen preliminar internacional (bajo Regla 55.2 y/o 55.3).

3. Respecto a cualquier secuencia de nucleótido y/o amino ácidos divulgada en la solicitud internacional, el examen preliminar internacional se llevó a cabo con base en el listado de secuencias:

- ☐ contenido en la solicitud internacional en forma escrita
- ☐ presentado junto con la solicitud internacional en forma legible por computador
- ☐ entregado posteriormente a esta Administración en forma legible por computador
- ☐ La declaración de que el listado de secuencias posteriormente entregado no va más allá de lo divulgado en la solicitud internacional originalmente presentada, ha sido entregada.
- ☐ La declaración de que la información grabada en la forma legible por computador es idéntica al listado de secuencias escrito que se ha entregado.

4. Las modificaciones han dado como resultado la cancelación de:

- ☐ la descripción, páginas _____,
- ☐ las reivindicaciones, Nos. _____,
- ☐ los dibujos, página _____.

5. ☐ Este reporte ha sido establecido como si (parte de) las modificaciones no se hubieran realizado, ya que éstas han sido consideradas como una ampliación de lo inicialmente divulgado como se indica en la Casilla Suplementaria (Regla 70.2(c)).

(Cualquier hoja de reemplazo que contenga dichas modificaciones deberá ser referida bajo el punto 1 y anexada a este informe.)

6. Observaciones adicionales, en caso de ser necesario:

V. Declaración motivada según el Artículo 35(2) en cuanto a la novedad, el nivel inventivo y la aplicación industrial; citas y explicaciones que apoyan esta declaración.

1. Declaración

Novedad (N)	Reivindicaciones	7 – 8	SI
	Reivindicaciones	1 – 6, 9 – 13	NO
Nivel inventivo (NI)	Reivindicaciones		SI
	Reivindicaciones	7 – 8	NO
Aplicación industrial (AI)	Reivindicaciones	1 – 13	SI
	Reivindicaciones		NO

2. Citas y explicaciones (Regla 70.7)

Ver hoja separada

Recuadro Suplementario

(Para ser usado cuando el espacio en alguno de los cuadros anteriores no es suficiente)

Ref. Punto I: Base del Informe

- No hay observaciones adicionales

Ref. Punto III: No-establecimiento de concepto relativo a la novedad, nivel Inventivo y aplicación Industrial

- No hay observaciones adicionales

Ref. Punto IV: Carencia de Unidad de Invención

- No hay observaciones adicionales

Ref. Punto V: Declaración motivada según el Artículo 35(2) en cuanto a la novedad, el nivel Inventivo y la aplicación Industrial; citas y explicaciones que apoyan esta declaración.

1 Se hace referencia a los siguientes documentos del estado del arte en el presente informe:

D1: US-A-6 160582 (HILL WOLFRAM) 12 de diciembre de 2000

2 El documento D1 es considerado como que representa el estado del arte más relevante.

2.1. El documento D1 revela un sistema de luz para cirugía que comprende:

a) una cabeza de luz (10) acoplada a una brzo desuspension (14) adaptado para montar a una superficie (13) de una sala de cirugía;

✓

- b) un bombillo (26) en dicha cabeza de luz (10);
- c) un procesador (40) en dicha cabeza de luz (10) acoplado de manera operativa con el bombillo (26) para controlar la intensidad de la luz del bombillo (26) (cf. Columna 3, renglones 60 a 64) y estando adaptado para generar una señal de estatus de la cabeza de luz representativa de un primer estatus de dicha cabeza de luz (cf. Columna 5, renglones 4 a 7);
- d) un aparato de control (44) en comunicación operativa con dicho procesador (40) en dicha cabeza de luz (10);
- e) el aparato de control (44) que recibe dicha señal de estatus de la cabeza de luz y,
- f) seleccionar un set de control de algoritmos de un grupo de algoritmos basados en dicha señal de estatus de cabeza de luz para controlar dicha cabeza de luz (10).

2.2. Observación con relación a las características "F" arriba mencionadas:

En un sistema de luz quirúrgica como se describe en el documento D1, a pesar de no estar explícitamente mencionado, el aparato de control (44) tiene que incorporar un número de algoritmos de control los cuales le permitirán al sistema reaccionar frente a la respuesta recibida de la cabeza de luz (por ejemplo: activación de una lámpara de reserva operaciones que envuelven el uso de un láser (48), nivel de iluminación controlada de manera sin etapas como se puede ver en las columnas 3 y 4 del documento D1).

Por lo tanto, las características "F" también son reveladas, incluso de manera implícita, en el documento D1, de manera que la materia objeto de la reivindicación 1 no es nueva y no llena los requerimientos del artículo 33(2) del PCT.

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3. Con respecto a las reivindicaciones dependientes:

3.1. La materia objeto de las reivindicaciones 2 a 6 no es nueva porque sus características adicionales también están divulgadas explícita o implícitamente por el documento D1 (Artículo 33(2) del PCT).

3.2. La materia objeto de las reivindicaciones 7 y 8 no envuelve un nivel inventivo porque sus características adicionales son consideradas obvias en el contexto del conocimiento de la persona versada (éstas describen un dispositivo de enchufe y encendido) (Artículo 33(3) del PCT).

3.3. La materia objeto de las reivindicaciones 9 a 13 no son nuevas porque sus características adicionales también están divulgadas explícita o implícitamente por el documento D1 (Artículo 33(2) del PCT).

4. La reivindicación independiente 1 no se encuentra en la forma de dos partes (regla 6.3 del PCT).

5. El documento relevante D1, citado anteriormente, no está mencionado en la descripción, contrario a los requerimientos de la regla 5.1(a) del PCT.

6. La materia objeto de acuerdo con las reivindicaciones 1 a 13 tiene aplicabilidad industrial (Artículo 33(4) del PCT).

PCT

REQUEST

The undersigned requests that the present international application be processed according to the Patent Cooperation Treaty.

For receiving Office use only

International Application No.

International Filing Date

Name of receiving Office and "PCT International Application"

Applicant's or agent's file reference
(if desired) (12 characters maximum) MEDZ 201246US

Box No. I TITLE OF INVENTION	
SURGICAL LIGHTING CONTROL AND VIDEO SYSTEM	
Box No. II APPLICANT ☐ This person is also inventor	
Name and address: (Family name followed by given names; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence (if no State of residence is indicated below.)	
STERIS INC. 43425 Business Park Drive Temecula, CA 92590 U.S.	Telephone No. 440-392-7111 Facsimile No. 440-392-8919 Teleprinter No. none Applicant's registration No. with the Office none
State (that is, country) of nationality: US	State (that is, country) of residence: US
This person is applicant for the purposes of: ☒ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)	
Name and address: (Family name followed by given names; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence (if no State of residence is indicated below.)	
RUS, Steven H. 112 Woodbridge Lane Chardon, OH 44024 U.S.	This person is: ☐ applicant only ☐ applicant and inventor ☒ inventor only (if this check-box is marked, do not fill in below.) Applicant's registration No. with the Office none
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
☐ Further applicants and/or (further) inventors are indicated on a continuation sheet.	
Box No. IV AGENT OR COMMON REPRESENTATIVE; OR ADDRESS FOR CORRESPONDENCE	
The person identified below is hereby/has been appointed to act on behalf of the applicant(s) before the competent International Authorities as: ☒ agent ☐ common representative	
Name and address: (Family name followed by given names; for a legal entity, full official designation. The address must include postal code and name of country.)	
KOCOVSKY, Thomas E. Fay, Sharpe, Fagan, Minnich & McKee, LLP 1100 Superior Avenue, 7th Floor Cleveland, OH 44114 U.S.	Telephone No. 216.861.5582 Facsimile No. 216/241.1666 Teleprinter No. none Agent's registration No. with the Office 28,383
☐ Address for correspondence: Mark this check-box where no agent or common representative is/has been appointed and the space above is used instead to indicate a special address to which correspondence should be sent.	

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S) <i>If none of the following sub-boxes is used, this sheet should not be included in the request.</i>	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) DRABINSKI, Terry A. 3096 Northview Drive Stow, OH 44224 U.S.	This person is: ☐ applicant only ☐ applicant and inventor ☒ inventor only (If this check-box is marked, do not fill in below.) Applicant's registration No. with the Office None
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) PETRUCCI, James A. 12121 Woodchuck Hollow Chesterland, OH 44026 U.S.	This person is: ☐ applicant only ☐ applicant and inventor ☒ inventor only (If this check-box is marked, do not fill in below.) Applicant's registration No. with the Office None
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) JESURUN, David 1196 Dorsh Road South Euclid, OH 44121	This person is: ☐ applicant only ☐ applicant and inventor ☒ inventor only (If this check-box is marked, do not fill in below.) Applicant's registration No. with the Office
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence if no State of residence is indicated below.) GRESZLER, Allan J. 10150 East River Road Elyria, OH 44035 U.S.	This person is: ☐ applicant only ☐ applicant and inventor ☒ inventor only (If this check-box is marked, do not fill in below.) Applicant's registration No. with the Office
State (that is, country) of nationality:	State (that is, country) of residence:
This person is applicant for the purposes of: ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box	
☒ Further applicants and/or (further) inventors are indicated on another continuation sheet.	

Continuation of Box No. III FURTHER APPLICANT(S) AND/OR (FURTHER) INVENTOR(S)

If none of the following sub-boxes is used, this sheet should not be included in the request.

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

KESELMAN, Yury
24002 East Baintree Road
Beachwood, OH 44122
US

This person is:

- ☐ applicant only
- ☐ applicant and inventor
- ☒ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

Name and address: (Family name followed by given name; for a legal entity, full official designation. The address must include postal code and name of country. The country of the address indicated in this box is the applicant's State (that is, country) of residence if no State of residence is indicated below.)

This person is:

- ☐ applicant only
- ☐ applicant and inventor
- ☐ inventor only (If this check-box is marked, do not fill in below.)

Applicant's registration No. with the Office

State (that is, country) of nationality:

State (that is, country) of residence:

This person is applicant for the purposes of:

- ☐ all designated States ☐ all designated States except the United States of America ☐ the United States of America only ☐ the States indicated in the Supplemental Box

☐ Further applicants and/or (further) inventors are indicated on another continuation sheet.

Box No. V DESIGNATION OF STATES

Mark the applicable check-boxes below; at least one must be marked.

The following designations are hereby made under Rule 4.9(a):

Regional Patent

- ☒ **AP** ARIPO Patent: GH Ghana, GM Gambia, KE Kenya, LS Lesotho, MW Malawi, MZ Mozambique, SD Sudan, SL Sierra Leone, SZ Swaziland, TZ United Republic of Tanzania, UG Uganda, ZM Zambia, ZW Zimbabwe, and any other State which is a Contracting State of the Harare Protocol and of the PCT (if other kind of protection or treatment desired, specify on dotted line)
- ☒ **EA** Eurasian Patent: AM Armenia, AZ Azerbaijan, BY Belarus, KG Kyrgyzstan, KZ Kazakhstan, MD Republic of Moldova, RU Russian Federation, TJ Tajikistan, TM Turkmenistan, and any other State which is a Contracting State of the Eurasian Patent Convention and of the PCT
- ☒ **EP** European Patent: AT Austria, BE Belgium, BG Bulgaria, CH & LI Switzerland and Liechtenstein, CY Cyprus, CZ Czech Republic, DE Germany, DK Denmark, EE Estonia, ES Spain, FI Finland, FR France, GB United Kingdom, GR Greece, IE Ireland, IT Italy, LU Luxembourg, MC Monaco, NL Netherlands, PT Portugal, SE Sweden, SI Slovenia, SK Slovakia, TR Turkey, and any other State which is a Contracting State of the European Patent Convention and of the PCT
- ☒ **OA** OAPI Patent: BF Burkina Faso, BJ Benin, CF Central African Republic, CG Congo, CI Côte d'Ivoire, CM Cameroon, GA Gabon, GN Guinea, GQ Equatorial Guinea, GW Guinea-Bissau, ML Mali, MR Mauritania, NE Niger, SN Senegal, TD Chad, TG Togo, and any other State which is a member State of OAPI and a Contracting State of the PCT (if other kind of protection or treatment desired, specify on dotted line)

National Patent (if other kind of protection or treatment desired, specify on dotted line):

- | | | |
|---|--|---|
| ☒ AE United Arab Emirates | ☒ GM Gambia | ☒ NZ New Zealand |
| ☒ AG Antigua and Barbuda | ☒ HR Croatia | ☒ OM Oman |
| ☒ AL Albania | ☒ HU Hungary | ☒ PH Philippines |
| ☒ AM Armenia | ☒ ID Indonesia | ☒ PL Poland |
| ☒ AT Austria | ☒ IL Israel | ☒ PT Portugal |
| ☒ AU Australia | ☒ IN India | ☒ RO Romania |
| ☒ AZ Azerbaijan | ☒ IS Iceland | ☒ RU Russian Federation |
| ☒ BA Bosnia and Herzegovina | ☒ JP Japan | |
| ☒ BB Barbados | ☒ KE Kenya | ☒ SC Seychelles |
| ☒ BG Bulgaria | ☒ KG Kyrgyzstan | ☒ SD Sudan |
| ☒ BR Brazil | ☒ KP Democratic People's Republic of Korea | ☒ SE Sweden |
| ☒ BY Belarus | ☒ KR Republic of Korea | ☒ SG Singapore |
| ☒ BZ Belize | ☒ KZ Kazakhstan | ☒ SK Slovakia |
| ☒ CA Canada | ☒ LC Saint Lucia | ☒ SL Sierra Leone |
| ☒ CH & LI Switzerland and Liechtenstein | ☒ LK Sri Lanka | ☒ TJ Tajikistan |
| ☒ CN China | ☒ LR Liberia | ☒ TM Turkmenistan |
| ☒ CO Colombia | ☒ LS Lesotho | ☒ TN Tunisia |
| ☒ CR Costa Rica | ☒ LT Lithuania | ☒ TR Turkey |
| ☒ CU Cuba | ☒ LU Luxembourg | ☒ TT Trinidad and Tobago |
| ☒ CZ Czech Republic | ☒ LV Latvia | ☒ TZ United Republic of Tanzania |
| ☒ DE Germany | ☒ MA Morocco | ☒ UA Ukraine |
| ☒ DK Denmark | ☒ MD Republic of Moldova | ☒ UG Uganda |
| ☒ DM Dominica | | ☐ US United States of America |
| ☒ DZ Algeria | ☒ MG Madagascar | |
| ☒ EC Ecuador | ☒ MK The former Yugoslav Republic of Macedonia | ☒ UZ Uzbekistan |
| ☒ EE Estonia | ☒ MN Mongolia | ☒ VC Saint Vincent and the Grenadines |
| ☒ ES Spain | ☒ MW Malawi | ☒ VN Viet Nam |
| ☒ FI Finland | ☒ MX Mexico | ☒ YU Yugoslavia |
| ☒ GB United Kingdom | ☒ MZ Mozambique | ☒ ZA South Africa |
| ☒ GD Grenada | ☒ NO Norway | ☒ ZM Zambia |
| ☒ GE Georgia | | ☒ ZW Zimbabwe |
| ☒ GH Ghana | | |

Check-boxes below reserved for designating States which have become party to the PCT after issuance of this sheet:

- | | | |
|--------------------------------|--------------------------------|--------------------------------|
| ☐ | ☐ | ☐ |
| ☐ | ☐ | ☐ |

Precautionary Designation Statement: In addition to the designations made above, the applicant also makes under Rule 4.9(b) all other designations which would be permitted under the PCT except any designation(s) indicated in the Supplemental Box as being excluded from the scope of this statement. The applicant declares that those additional designations are subject to confirmation and that any designation which is not confirmed before the expiration of 15 months from the priority date is to be regarded as withdrawn by the applicant at the expiration of that time limit. (Confirmation (including fees) must reach the receiving Office within the 15-month time limit.)

Box No. VI PRIORITY CLAIM				
The priority of the following earlier application(s) is hereby claimed:				
Filing date of earlier application (day/month/year)	Number of earlier application	Where earlier application is:		
		national application: country or Member of WTO	regional application:* regional Office	international application: receiving Office
item (1) 15 January 2002	60/348,999	US		
item (2)				
item (3)				
item (4)				
item (5)				

☐ Further priority claims are indicated in the Supplemental Box.

The receiving Office is requested to prepare and transmit to the International Bureau a certified copy of the earlier application(s) (only if the earlier application was filed with the Office which for the purposes of this international application is the receiving Office) identified above as:

☒ all items
 ☐ item (1)
 ☐ item (2)
 ☐ item (3)
 ☐ item (4)
 ☐ item (5)
 ☐ other, see Supplemental Box

* Where the earlier application is an ARIPO application, indicate at least one country party to the Paris Convention for the Protection of Industrial Property or one Member of the World Trade Organization for which that earlier application was filed (Rule 4.10(b)(ii)):

Box No. VII INTERNATIONAL SEARCHING AUTHORITY

Choice of International Searching Authority (ISA) (if two or more International Searching Authorities are competent to carry out the international search, indicate the Authority chosen; the two-letter code may be used):

ISA / EP

Request to use results of earlier search; reference to that search (if an earlier search has been carried out by or requested from the International Searching Authority):

Date (day/month/year)	Number	Country (or regional Office)

Box No. VIII DECLARATIONS

The following declarations are contained in Boxes Nos. VIII (i) to (v) (mark the applicable check-boxes below and indicate in the right column the number of each type of declaration):	Number of declarations
☐ Box No. VIII (i) Declaration as to the identity of the inventor	:
☐ Box No. VIII (ii) Declaration as to the applicant's entitlement, as at the international filing date, to apply for and be granted a patent	:
☐ Box No. VIII (iii) Declaration as to the applicant's entitlement, as at the international filing date, to claim the priority of the earlier application	:
☐ Box No. VIII (iv) Declaration of inventorship (only for the purposes of the designation of the United States of America)	:
☐ Box No. VIII (v) Declaration as to non-prejudicial disclosures or exceptions to lack of novelty	:

Box No. IX CHECK LIST; LANGUAGE OF FILING

This international application contains:	This international application is accompanied by the following item(s) (mark the applicable check-boxes below and indicate in right column the number of each item):	Number of items
(a) In paper form, the following number of sheets:	1. ☒ fee calculation sheet	1
request (including declaration sheet) : 6	2. ☐ original separate power of attorney	:
description (excluding sequence listings and/or tables related thereto) : 13	3. ☒ original general power of attorney	1
claims : 3	4. ☐ copy of general power of attorney; reference number, if any:	:
abstract : 1	5. ☐ statement explaining lack of signature	:
drawings : 7	6. ☐ priority document(s) identified in Box No. VI as item(s):	:
Sub-total number of sheets : 30	7. ☐ translation of international application into (language):	:
sequence listings	8. ☐ separate indications concerning deposited microorganism or other biological material	:
tables related thereto	9. ☐ sequence listings in computer readable form (indicate type and number of carriers)	:
(for both, actual number of sheets if filed in paper form, whether or not also filed in computer readable form; see (c) below)	(i) ☐ copy submitted for the purposes of international search under Rule 13ter only (and not as part of the international application):	:
Total number of sheets : 30	(ii) ☐ (only where check-box (b)(i) or (c)(i) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Rule 13ter	:
(b) ☐ only in computer readable form (Section 801(a)(i))	(iii) ☐ together with relevant statement as to the identity of the copy or copies with the sequence listings mentioned in left column	:
(i) ☐ sequence listings	10. ☐ tables in computer readable form related to sequence listings (indicate type and number of carriers)	:
(ii) ☐ tables related thereto	(i) ☐ copy submitted for the purposes of international search under Section 802(b-quarter) only (and not as part of the international application)	:
(c) ☐ also in computer readable form (Section 801(a)(ii))	(ii) ☐ (only where check-box (b)(ii) or (c)(ii) is marked in left column) additional copies including, where applicable, the copy for the purposes of international search under Section 802(b-quarter)	:
(i) ☐ sequence listings	(iii) ☐ together with relevant statement as to the identity of the copy or copies with the tables mentioned in left column	:
(ii) ☐ tables related thereto	11. ☐ other (specify):	:
Type and number of carriers (discette, CD-ROM, CD-R or other) on which are contained the		
☐ sequence listings:		
☐ tables related thereto:		
(additional copies to be indicated under items 9(ii) and/or 10(ii), in right column)		

Figure of the drawings which should accompany the abstract:

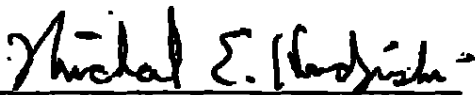
1

Language of filing of the international application:

English

Box No. X SIGNATURE OF APPLICANT, AGENT OR COMMON REPRESENTATIVE

Must to each signature, indicate the name of the person signing and the capacity in which the person signs (if such capacity is not obvious from reading the request).



January 15, 2003

MICHAEL E. HUDZINSKI, Agent for Applicant
STERIS INC.

For receiving Office use only

1. Date of actual receipt of the purported international application:	2. Drawings: ☐ received: ☐ not received:
3. Corrected date of actual receipt due to later but timely received papers or drawings completing the purported international application:	
4. Date of timely receipt of the required corrections under PCT Article 1(2):	
5. International Searching Authority (if two or more are competent): ISA /	6. ☐ Transmittal of search copy delayed until search fee is paid

For International Bureau use only

Date of receipt of the record copy by the International Bureau:

NOV 14 2003

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITYPCT
FAY, SHARPE, FAGAN,
MINNICH & MCKEE, LLP

To:

Kocovsky, Thomas E.
FAY, SHARPE, FAGAN, MINNICH
& MCKEE, LLP
1100 Superior Avenue
Seventh Floor
Cleveland, OH 44114
ETATS-UNIS D'AMERIQUE

NOTIFICATION OF RECEIPT
OF DEMAND BY COMPETENT INTERNATIONAL
PRELIMINARY EXAMINING AUTHORITY(PCT Rules 59.3(e) and 61.1(b), first sentence
and Administrative Instructions, Section 601(a))Date of mailing
(day/month/year)

10-11-2003

Applicant's or agent's file reference

MEDZ201246PCT

IMPORTANT NOTIFICATION

International application No.

PCT/US 03/ 01138

International filing date (day/month/year)

15/01/2003

Priority date (day/month/year)

Applicant

1. The applicant is hereby notified that this International Preliminary Examining Authority considers the following date as the date of receipt of the demand for international preliminary examination of the international application:

13/08/2003

2. This date of receipt is:

- ☒ the actual date of receipt of the demand by this Authority (Rule 61.1(b)).
☐ the actual date of receipt of the demand on behalf of this Authority (Rule 59.3(e)).
☐ the date on which this Authority has, in response to the invitation to correct defects in the demand (Form PCT/IPBA/404), received the required corrections.

3. ☐ **ATTENTION:** That date of receipt is **AFTER** the expiration of 19 months from the priority date. Consequently, the election(s) made in the demand does (do) not have the effect of postponing the entry into the national phase until 30 months from the priority date (or later in some Offices) (Article 39(1)). Therefore, the acts for entry into the national phase must be performed within 20 months from the priority date (or later in some Offices) (Article 22). For details, see the *PCT Applicant's Guide*, Volume II.

- ☐ (If applicable) This notification confirms the information given by telephone, facsimile transmission or in person on:

4. Only where paragraph 3 applies, a copy of this notification has been sent to the International Bureau.

Name and mailing address of the IPBA/



European Patent Office
D-80298 Munich
Tel. (+49-89) 2399-0, Tx: 523656 eptmu d
Fax: (+49-89) 2399-4465

Authorized officer

TESCHAUER B A

Tel. (+49-89) 2399-4465

"DOCKETED"



IPBA 402

PATENT COOPERATION TREATY

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From the INTERNATIONAL BUREAU

PCT

NOTIFICATION OF RECEIPT OF
RECORD COPY

(PCT Rule 24.2(a))

RECEIVED

MAY 23 2003

FAY, SHARPE, FAGAN,
MINNICH & MCKEE, LLP

To:

KOCOVSKY, Thomas, E.
Fay, Sharpe, Fagan, Minnich &
McKee, LLP
7th Floor
1100 Superior Avenue
Cleveland, OH 44114
United States of America

Date of mailing (day/month/year) 02 May 2003 (02.05.03)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference MEDZ 201246U	International application No. PCT/US03/01138

The applicant is hereby notified that the International Bureau has received the record copy of the International application as detailed below.

Name(s) of the applicant(s) and State(s) for which they are applicants:

STERIS INC.(all designated States)

International filing date : 15 January 2003 (15.01.03)

Priority date(s) claimed : 15 January 2002 (15.01.02)

Date of receipt of the record copy
by the International Bureau : 21 March 2003 (21.03.03)

List of designated Offices :

AP : GH,GM,KE,LS,MW,MZ,SD,SL,SZ,TZ,UG,ZM,ZW
EA : AM,AZ,BY,KG,KZ,MD,RU,TJ,TM
EP : AT,BE,BG,CH,CY,CZ,DE,DK,EE,ES,FI,FR,GB,GR,HU,IE,IT,LU,MC,NL,PT,SE,SI,SK,TR
OA : BF,BJ,CF,CG,CI,CM,GA,GN,GQ,GW,ML,MR,NE,SN,TD,TG
National : AE,AG,AL,AM,AT,AU,AZ,BA,BB,BG,BR,BY,BZ,CA,CH,CN,CO,CR,CU,CZ,DE,DK,DM,DZ,
EC,EE,ES,FI,GB,GD,GE,GH,GM,HR,HU,ID,IL,IN,IS,JP,KE,KG,KP,KR,KZ,LC,LK,LR,LS,LT,LU,
LV,MA,MD,MG,MK,MN,MW,MX,MZ,NO,NZ,OM,PH,PL,PT,RO,RU,SC,SD,SE,SG,SK,SL,TJ,TM,TN,TR,
TT,TZ,UA,UG,UZ,VC,VN,YU,ZA,ZM,ZW

ATTENTION

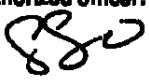
The applicant should carefully check the data appearing in this Notification. In case of any discrepancy between these data and the indications in the International application, the applicant should immediately inform the International Bureau.

In addition, the applicant's attention is drawn to the information contained in the Annex, relating to:

- ☒ time limits for entry into the national phase - see updated important information (as of April 2002)
- ☒ confirmation of precautionary designations (if applicable)
- ☐ requirements regarding priority documents (if applicable)

A copy of this Notification is being sent to the receiving Office and to the International Searching Authority.

"DOCKETED"

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 338.88.85	Authorized officer:  Sylvie SOBEZYNSKI Telephone No. (41-22) 338 8087
--	--

Form PCT/IB/2001/1-4-11/0001

000017010

PATENT COOPERATION TREATY

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PCT

From the INTERNATIONAL BUREAU

NOTIFICATION CONCERNING SUBMISSION OR TRANSMITTAL OF PRIORITY DOCUMENT

(PCT Administrative Instructions, Section 411)

To:

KOCOVSKY, Thomas, E.
Fay, Sharpe, Fagan, Minnich &
McKee, LLP
7th Floor
1100 Superior Avenue
Cleveland, OH 44114
United States of America

Date of mailing (day/month/year) 02 May 2003 (02.05.03)	IMPORTANT NOTIFICATION
Applicant's or agent's file reference MEDZ 201246U	
International application No. PCT/US03/01138	International filing date (day/month/year) 15 January 2003 (15.01.03)
International publication date (day/month/year) Not yet published	Priority date (day/month/year) 15 January 2002 (15.01.02)
Applicant STERIS INC.	

1. The applicant is hereby notified of the date of receipt (except where the letters "NR" appear in the right-hand column) by the International Bureau of the priority document(s) relating to the earlier application(s) indicated below. Unless otherwise indicated by an asterisk appearing next to a date of receipt, or by the letters "NR", in the right-hand column, the priority document concerned was submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b).
2. This updates and replaces any previously issued notification concerning submission or transmittal of priority documents.
3. An asterisk(*) appearing next to a date of receipt, in the right-hand column, denotes a priority document submitted or transmitted to the International Bureau but not in compliance with Rule 17.1(a) or (b). In such a case, the attention of the applicant is directed to Rule 17.1(a) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.
4. The letters "NR" appearing in the right-hand column denote a priority document which was not received by the International Bureau or which the applicant did not request the receiving Office to prepare and transmit to the International Bureau, as provided by Rule 17.1(a) or (b), respectively. In such a case, the attention of the applicant is directed to Rule 17.1(a) which provides that no designated Office may disregard the priority claim concerned before giving the applicant an opportunity, upon entry into the national phase, to furnish the priority document within a time limit which is reasonable under the circumstances.

Priority date	Priority application No.	Country or regional Office or PCT receiving Office	Date of receipt of priority document
15 Janu 2002 (15.01.02)	60/348,999	US	07 Febr 2003 (07.02.03)

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No. (41-22) 338.89.85	Authorized officer  Sylvie SOBEZYNSKI Telephone No. (41-22) 338 8087
---	---

"DOCKETED"

PCT**NOTICE INFORMING THE APPLICANT OF THE
COMMUNICATION OF THE INTERNATIONAL
APPLICATION TO THE DESIGNATED OFFICES**

(PCT Rule 47.1(c), first sentence)

To:

MEDZ 1246PCTKOCOVSKY, Thomas, E.
Fay, Sharpe, Fagan, Minnich & McKee, LLP
7th Floor
1100 Superior Avenue
Cleveland, OH 44114
ETATS-UNIS D'AMERIQUE**RECEIVED****AUG - 4 2003**FAY, SHARPE, FAGAN,
MINNICH & MCKEE, LLP

Date of mailing (day/month/year) 24 July 2003 (24.07.03)		
Applicant's or agent's file reference MEDZ 201248U		IMPORTANT NOTICE
International application No. PCT/US03/01138	International filing date (day/month/year) 15 January 2003 (15.01.03)	Priority date (day/month/year) 15 January 2002 (15.01.02)
Applicant STERIS INC.		

1. Notice is hereby given that the International Bureau has communicated, as provided in Article 30, the international application to the following designated Offices on the date indicated above as the date of mailing of this notice:

CH, EP, KP, KR

In accordance with Rule 47.1(c), third sentence, those Offices will accept the present notice as conclusive evidence that the communication of the international application has duly taken place on the date of mailing indicated above and no copy of the international application is required to be furnished by the applicant to the designated Office(s).

2. The following designated Offices have waived the requirement for such a communication at this time:

AE, AG, AL, AM, AP, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EA, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OA, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW

The communication will be made to those Offices only upon their request. Furthermore, those Offices do not require the applicant to furnish a copy of the international application (Rule 49.1(a-bis)).

3. Enclosed with this notice is a copy of the international application as published by the International Bureau on 24 July 2003 (24.07.03) under No. 03/059235

4. **TIME LIMITS** for filing a demand for international preliminary examination and for entry into the national phase

The applicable time limit for entering the national phase will, subject to what is said in the following paragraph, be 30 MONTHS from the priority date, not only in respect of any elected Office if a demand for international preliminary examination is filed before the expiration of 19 months from the priority date, but also in respect of any designated Office, in the absence of filing of such demand, where Article 22(1) as modified with effect from 1 April 2002 applies in respect of that designated Office. For further details, see *PCT Gazette* No. 44/2001 of 1 November 2001, pages 19926, 19932 and 19934, as well as the *PCT Newsletter*, October and November 2001 and February 2002 issues.

In practice, time limits other than the 30-month time limit will continue to apply, for various periods of time, in respect of certain designated or elected Offices. For regular updates on the applicable time limits (20, 21, 30 or 31 months, or other time limit), Office by Office, refer to the *PCT Gazette*, the *PCT Newsletter* and the *PCT Applicant's Guide*, Volume II, National Chapters, all available from WIPO's Internet site, at <http://www.wipo.int/pct/en/index.html>.

For filing a demand for international preliminary examination, see the *PCT Applicant's Guide*, Volume IA, Chapter IX. Only an applicant who is a national or resident of a PCT Contracting State which is bound by Chapter II has the right to file a demand for international preliminary examination (at present, all PCT Contracting States are bound by Chapter II).

It is the applicant's sole responsibility to monitor all these time limits.

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Judith Zahra "DOCKETED"
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PATENT COOPERATION TREATY

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PCT

INFORMATION CONCERNING ELECTED
OFFICES NOTIFIED OF THEIR ELECTION

(PCT Rule 61.3)

From the INTERNATIONAL BUREAU

To:

KOCOVSKY, Thomas, E.
Fay, Sharpe, Fagan, Minnich &
McKee, LLP
7th Floor
1100 Superior Avenue
Cleveland, OH 44114
United States of America

RECEIVED

DEC - 3 2003

FAY, SHARPE, BEALL, FAGAN,
MINNICH & MCKEE

Date of mailing (day/month/year)

25 November 2003 (25.11.03)

Applicant's or agent's file reference

MEDZ 201248 PCT

IMPORTANT INFORMATION

International application No.

PCT/US03/01138

International filing date (day/month/year)

15 January 2003 (15.01.03)

Priority date (day/month/year)

15 January 2002 (15.01.02)

Applicant

STERIS INC.

1. The applicant is hereby informed that the International Bureau has, according to Article 31(7), notified each of the following Offices of its election:

EP : AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,
SK, TR

National : BG, CA, CN, DE, GB, IL, JP, KP, KR, MN, NO, PL, RO, RU, SK

2. The following Offices have waived the requirement for the notification of their election; the notification will be sent to them by the International Bureau only upon their request:

AP : GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW

EA : AM, AZ, BY, KG, KZ, MD, RU, TJ, TM

OA : BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

National : AE, AG, AL, AM, AT, AU, AZ, BA, BB, BR, BY, BZ, CH, CO, CR, CU, CZ, DK, DM, DZ, EC,
EE, ES, FI, GD, GE, GH, GM, HR, HU, ID, IN, IS, KE, KG, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MW, MX, MZ, NZ, OM, PH, PT, SC, SD, SE, SG, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC,
VN, YU, ZA, ZM, ZW

3. The applicant is reminded that he must enter the "national phase" before the expiration of 30 months from the priority date before each of the Offices listed above. This must be done by paying the national fee(s) and furnishing, if prescribed, a translation of the international application (Article 38(1)(a)), as well as, where applicable, by furnishing a translation of any annexes of the international preliminary examination report (Article 38(3)(b) and Rule 74.1).

Some offices have fixed time limits expiring later than the above-mentioned time limit. For detailed information about the applicable time limits and the acts to be performed upon entry into the national phase before a particular Office, see Volume II of the PCT Applicant's Guide.

The entry into the European regional phase is postponed until 31 months from the priority date for all States designated for the purposes of obtaining a European patent.

"DOCKETED"

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No. (41-22) 338.89.65

Authorized officer:

Sylvie SOBEZYNSKI

Telephone No. (41-22) 338 8087

SISTEMA DE CONTROL DE ILUMINACIÓN QUIRÚRGICA Y DE VIDEO**REFERENCIAS CRUZADAS A SOLICITUDES RELACIONADAS**

Esta solicitud reclama el beneficio de la solicitud provisional estadounidense Serie No. 60/348,999, presentada en Enero 15, del 2002.

ANTECEDENTES DE LA INVENCION

La presente invención se relaciona con la iluminación quirúrgica, la mesa, y los artes accesorios, y, mas particularmente, a un sistema de control de iluminación quirúrgica que suministra múltiples interfaces de usuario, control gráfico centralizado para diversas funciones, detección de cámara avanzada/enrutamiento de señal, y control de lazo cerrado de la intensidad de lámpara. Se encuentra de aplicación particular en conjunto con suministrar un sistema de control comprensivo para un cuarto de operaciones quirúrgicas (OR) teatro y será descrito con referencia particular a esto. Debe apreciarse, sin embargo, que la invención también encuentra aplicación en otras aplicaciones de

control multitarea y no está limitado al ambiente de cuarto de operación anteriormente mencionado.

Típicamente, en un establecimiento de un cuarto de operación, grande, las luminarias de salida de altos lúmenes son usadas para iluminar el sitio quirúrgico. Frecuentemente, videocámaras, son sujetadas a las luminarias para la documentación de la cirugía y para ayudar al cirujano a lograr una visión óptima. Algunos sistemas frecuentemente no ofrecen ningún control de la cámara al personal en el OR. Sin mover físicamente la cámara/luminaria, tales sistemas solamente ofrecen una orientación única de cámara y un factor de amplificación. Otros sistemas ofrecen control de la cámara y de las luminarias al personal en el OR, pero no al cirujano. El cirujano debe solicitar que una enfermera circulante no estéril ajuste los controles de iluminación o los controles de cámara cuando se requiera.

Los sistemas existentes no monitorean el suministro de potencia a los bombillos dentro de las luminarias. Esto resulta en fluctuaciones de intensidad de luz debido a desviaciones en el bombillo, fluctuaciones de voltaje, y resistencias de la línea. Las variaciones en la potencia

de la lámpara pueden reducir la intensidad de luz con efectos adversos potenciales en el procedimiento quirúrgico o incrementar la intensidad de luz causando una reducción en la vida de la lámpara.

Adicionalmente, la mayoría de los sistemas existentes no ofrecen un control centralizado. De acuerdo a lo anterior, el personal de enfermeras circulantes debe moverse primero a un panel para operar los controles de intensidad de luz, luego hacia otra localización para hacer girar la cámara, etc. Esto lleva a confusión cuando se operan los sistemas, y desorganización en el OR debido a las localizaciones de interfaz de usuario adicionales.

En sistemas que usan un control centralizado, las actualizaciones del hardware/actualizaciones son difíciles porque el software del control frecuentemente no puede ser adaptado para reconocer y operar con el nuevo equipo. Sería por lo tanto deseable suministrar un sistema de control de video e iluminación quirúrgicos con software adaptado para interactuar con nuevos equipos por medio de actualizaciones o regulaciones de parámetros sencillos del software.

La presente invención suministra métodos nuevos y mejorados y aparatos que solucionan los problemas anteriormente mencionados y otros para suministrar un mejor control más comprensivo de sistemas de video e iluminación en aplicaciones de cuartos de operaciones quirúrgicas.

BREVE RESUMEN DE LA INVENCION

Las modalidades preferidas de la presente invención suministran una interfaz de control del tipo enchufe y juego que le da a un usuario acceso a múltiples dispositivos en una estación, le da al cirujano control de más dispositivos dentro del campo estéril, y hace el control del sistema más simple y más intuitivo.

La presente invención mejora el acceso del usuario al sistema suministrando una pantalla LCD gráfica para controlar una pluralidad de dispositivos, tal como lámparas de iluminación, ambiente de iluminación, cámaras, y otros accesorios del cuarto de operaciones. El control del cirujano es mejorado por un sistema de interfaz de voz, permitiéndole al cirujano ajustar la luz y otros aspectos simplemente hablando. Una interfaz de

pedal de pie y una interfaz de control remoto por infrarrojo garantiza al cirujano el control de las cámaras, permitiéndole el control directo para las funciones de giro y acercamiento de la cámara.

Las modalidades preferidas de la presente invención suministran compatibilidad del tipo enchufe y juego, de modo que los dispositivos tales como cámaras, las luminarias completas, las luces para tareas, y otros accesorios quirúrgicos puedan ser conmutados dentro y fuera del sistema según se necesite, sin la necesidad de actualizar el software del sistema o el protocolo de control. Esto puede ocurrir a medida que luminarias adicionales u otros dispositivos son agregados al sistema o cuando los dispositivos son reemplazados por razones de actualización o similares.

Una unidad de control de pared del sistema objeto suministra una visualización en pantalla LCD gráfica que permite las entradas/salidas del usuario centralizado en todos los controles. El control de pared también suministra conexiones de entrada/salida para las opciones del sistema tales como un video, un dispositivo de grabación, control de voz, una luz de tarea por fibra

óptica, un control de pie para cámara. La interfaz de LCD suministra un control al usuario de alto nivel de las luz de tareas por fibra óptica de la video cámara, la luz de ambiente, y múltiples luminarias.

Todas las luminarias de tamaño medio y grande son preferiblemente auxiliadas por cámara. Un módulo de cámara puede ser colocado dentro de cualquiera de estas luminarias según se desea. El sistema de control está adaptado para detectar automáticamente la luminaria particular en la cual la cámara está localizada y dirigir la señal al control de pared por medio de medios electrónicos de una manera del tipo "enchufe y juego".

Adicionalmente, la función de servicio es incorporada dentro del sistema lo que permite al personal de servicio o mantenimiento desconectar las luminarias completas para su reemplazo con luminarias nuevas. El sistema de control detecta una nueva luminaria y descarga el software compatible para la luminaria (enchufe y juego) según sea necesario. Esto disminuye el tiempo en que el producto está fuera de servicio y las llamadas de servicio. Cada luminaria incluye un microcontrolador adaptado para enviar y recibir información de control desde el control

de pared y adaptado adicionalmente para responder a los interruptores en el panel de mano de luz.

El microcontrolador también suministra un control de lazo cerrado para ajustar el control sobre la potencia de la lámpara. El controlador mide el voltaje de la lámpara y la corriente y establece un ciclo de trabajo para un circuito de modulación de ancho de pulso (PWM). Esto da de manera efectiva luz consistente compensando la mayor parte de todas las fuentes de variación.

El control avanzado permite que todas las luminarias en el sistema sean encendidas/apagadas desde la entrada del control interruptor sobre cualquier luz en el sistema. Oprimiendo y manteniendo el botón de intensidad hacia abajo "-" en el control de la manija de la luminaria durante un periodo seleccionado, preferiblemente cuatro (4) segundos apaga todas las luminarias y preferiblemente de manera simultánea enciende una luz de ambiente. Oprimiendo y manteniendo el botón de intensidad hacia arriba "+" un periodo seleccionado preferiblemente durante dos (2) segundos enciende todas las luminarias y preferiblemente de manera simultánea apaga la luz ambiente.

El control de pared suministra una interfaz de usuario simple y centralizada que ahorra tiempo de personal de enfermería circulante. El control avanzado de los interruptores en el control manual de la luz da control de las luces al cirujano también. Esto ahorra tiempo a todo el equipo.

El sistema de control suministra diversos niveles de redundancia para poder minimizar la pérdida potencial del control del sistema de iluminación durante los procedimientos quirúrgicos. Cualquiera de los dos suministros de potencia en el control central es suficiente para mantener la operación del microcontrolador. Si el microcontrolador o los interruptores en la unidad de control de pared fallan, entonces la funcionalidad ON/OFF y el control de intensidad pueden ser llevados a cabo usando solamente el microcontrolador y los interruptores de las luminarias.

Los rasgos de videocámara son accesibles por medio de la interfaz de usuario, incluyendo por lo menos la potencia y el acercamiento, el giro, el brillo y los controles de foco. Los controles de cámara avanzados también son

accesibles por medio de la interfaz de usuario utilizando por ejemplo el balance de blanco, congelamiento de cuadros, la visualización de la hora y fecha. El módulo de cámara está adaptado para ser conectado con cualquier luminaria media o grande. El sistema de control del sistema objeto detecta automáticamente la presencia del módulo de cámara y dirige la señal o señales de video al control de pared.

Muchos rasgos de control son suministrados en el sistema de iluminación quirúrgico de acuerdo con la invención. Una interfaz gráfica de usuario, preferiblemente, inalámbrico pantalla LCD suministra el control centralizado de todos los componentes en el sistema. El control ON/OFF de todas las luminarias es suministrado en el sistema desde un único punto del control de intensidad del control de interruptores manual de luz aunque se mantiene una técnica estéril. Los rasgos de control de cámara avanzados son suministrados incluyendo el balance de blanco, el congelamiento de cuadros, visualización de la hora y fecha. El sistema de control detecta el módulo de cámara y dirige la señal de video al control de pared. Esto coincide con la habilidad del sistema para aceptar un módulo de cámara en localizaciones múltiples. Un

esquema de control de potencia de lámparas en lazo cerrado mantiene niveles de intensidad consistentes durante el tiempo y bajo diferentes condiciones de instalación. El control de pared detecta nuevas luminarias y automáticamente descarga el software para hacerlo compatible con las luminarias en el sistema.

La anterior lista no es exhaustiva de los rasgos de control suministrados en los sistemas de iluminación quirúrgicos de acuerdo con la invención.

BREVE DESCRIPCIÓN DE LOS DIBUJOS

La invención puede tomar la forma en cierto métodos, partes, y disposiciones de partes, las modalidades preferidas de las cuales serán descritas en detalle en esta especificación e ilustradas en los dibujos adjuntos que forman parte de la misma y en donde:

La FIGURA 1 es una vista en perspectiva de un sistema de iluminación quirúrgico de acuerdo con la presente invención que muestra un primer conjunto de equipo de iluminación quirúrgico suspendido desde un eje principal y un segundo conjunto de equipo de iluminación suspendido

desde un eje secundario, y un aparato de control del sistema;

La FIGURA 2 es un diagrama de bloques que ilustra los componentes del aparato de control de iluminación objeto;

La FIGURA 3 es un diagrama de bloques que ilustra los bloques funcionales de un módulo electrónico del sistema de iluminación quirúrgico objeto;

La FIGURA 4 es un diagrama de bloques funcional que ilustra un tablero controlador de lámparas del sistema de iluminación quirúrgico objeto;

La FIGURA 5 es un diagrama de flujo que ilustra una función de autodetectar componentes ejecutada por el sistema de control objeto;

La FIGURA 6 es una vista de una pantalla de usuario desplegada por el aparato de control de iluminación de la iluminación quirúrgica objeto; y

La FIGURA 7 es una vista de la pantalla de usuario que visualiza un submenú provisto por el aparato de control de iluminación del sistema objeto.

DESCRIPCIÓN DETALLADA DE LAS MODALIDADES PREFERIDAS

Con referencia ahora a las figuras dibujadas en donde las muestras tienen el propósito de ilustrar las modalidades preferidas de la invención solamente y no propósitos de limitar la misma, la FIGURA 1 muestra un sistema de iluminación quirúrgico 10 que incluye un primer conjunto de dispositivos de iluminación 12 soportados desde el techo 14 de un cuarto de operaciones por un cubo de eje principal 16 y un segundo conjunto de dispositivos de iluminación 18 soportados desde el techo 14 por un segundo cubo de eje secundario 20. Un aparato de control de iluminación 30 incluye una unidad de control maestro 32 para operar al primer conjunto de dispositivos de iluminación 12 y una segunda unidad de control 34 para controlar la operación del segundo conjunto de dispositivos de iluminación 18. Un conjunto de líneas de comunicación y de potencia 36 conecta el aparato de control de iluminación 30 con el primer y segundo conjunto de dispositivos de iluminación 12, 18 para el

control de los mismos de una manera como se describe en mayor detalle más adelante.

El primer conjunto de dispositivos de iluminación 12 soportado por el cubo de eje primario 16 incluye tres (3) luminarias delanteras 40-44, una luz de tareas quirúrgicas 46 y una luz de ambiente del cuarto de operaciones 48. Cada una de las luminarias quirúrgicas 40-44 son llevadas sobre un sistema de suspensión correspondiente 40'-44'. Similarmente la luz de tarea quirúrgica es llevada sobre un brazo de suspensión 46'. Cada uno de los brazos de suspensión 40'-46' llevan los cables apropiados de potencia y de comunicaciones que serán descritos más adelante y adicionalmente permiten el movimiento de las luminarias 40-44 y de la luz de tareas 46 en las posiciones seleccionadas en relación con la aplicación del cuarto de operaciones. Cada luminaria está provista con un conjunto de botones de control de intensidad de luz operables manualmente 124, preferiblemente localizados adyacentes a la manija de la luminaria de cada dispositivo. La luz ambiente 48 está montada en una localización fijada en relación al cubo de eje principal 16. Una luminaria única auxiliar 50 junto con una luz ambiente auxiliar 52 están soportadas sobre

el cubo de eje secundario 20 por un brazo de suspensión adecuado 50'. Debe apreciarse que aunque diversos dispositivos de iluminación son suministrados en el primer conjunto 12 y solamente un único dispositivo de iluminación es encontrado en el segundo conjunto 18, más o menos dispositivos de iluminación pueden ser usados según se desee. Adicionalmente, más o menos cubos de eje 16, 20 pueden ser incluidos en el sistema según se desee.

Con referencia a la FIGURA 2, el sistema de iluminación objeto 10 es mostrado en forma de diagrama de bloque funcional. Debe apreciarse que el sistema está particionado para suministrar un alto nivel de redundancia para impedir fallas puntuales únicas que causen un "ennegrecimiento" o condición de no luz. Para este fin, cada luminaria quirúrgica incluye un suministro separado de potencia AC/DC y adicionalmente incluye la capacidad de conmutar a un suministro de respaldo de batería de 24 VDC. Cada luminaria quirúrgica también está provista con su propio controlador electrónico y sus programas operaciones residentes que son ejecutables en la luminaria.

Las luminarias 40-44 y 50 cada una respectivamente incluyen un módulo electrónico 60-66 para ejecutar los programas de acuerdo con algoritmos predeterminados. Cada una de las luminarias en el sistema objeto están adaptadas para comunicarse con el aparato de control de iluminación 30 para controlar las diversas funciones de iluminación y para suministrar las capacidades de enchufe y juego. Las líneas de comunicación y de potencia 36 incluyen cables de potencia de luminarias separados 70-76 para suministrar la potencia desde el aparato de control de iluminación 30 a las luminarias individuales. En adición, las líneas de comunicación y de potencia 36 incluyen un par de cables de comunicación 80, 82 para portar los datos de comando y de estado entre los dispositivos de iluminación 12, 18 y el aparato de control de iluminación 30. A este fin, la unidad de control maestro 32 incluye un tablero de control electrónico 90 para generar señales que serán llevadas por los cables de comunicación 80, 82 entre la unidad de control y las luminarias 40-44, 50 y las luz de tareas 46.

Con referencia continuada a la FIGURA 2, debe también notarse que la modalidad del sistema de iluminación

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quirúrgico 10 objeto incluye una cámara de video 100. La cámara de video 100 está portada por la luminaria grande 44 como se ilustró. Las señales de video desde la cámara 100 pasan por el brazo de suspensión 44' de la luminaria grande 44 y dentro de un tablero electrónico del cubo común 104 y dentro de un componente de tarjeta de video 106 del tablero de control electrónico 90 de la unidad de control maestro 32. El componente de tarjeta de video 106 está adaptado para generar una señal compuesta de video 108 y una señal S-video 110.

Las FIGURAS 3 y 4 muestran, en forma de diagrama de bloques, los componentes funcionales del módulo de electrónicos 64 de la luminaria grande 44. Como se muestra en la FIGURA 3, el módulo de electrónicos 64 incluye un tablero de control de lámpara 120, un módulo e cámara 122, un conjunto de interruptores de intensidad de bombillo operables manualmente 124, una lámpara de salida visual 126, preferiblemente un LED, un mecanismo de cambio de bombillos 128 que sostiene un bombillo primario 130 y un bombillo secundario 132, y un solenoide de cambio de bombillo 134 para efectuar los cambios de bombillo luego de la falla del bombillo primario 130. Todos estos componentes están en comunicación local

operativa con el tablero de control de lámpara 120. La comunicación operativa con el aparato de control de iluminación 30 (figs. 1 y 2) está provista por el conjunto de líneas de comunicación y de potencia 36 incluyendo una línea diferencial de señal de video 140, una línea de señal de puerto serial de lámpara 142 y una línea de señal de potencia del sistema 144. La línea de señal diferencial de video 140 suministra señales de video desde el módulo de cámara 122 al aparato de control de iluminación 30. Las líneas de comunicación serial de lámparas 142, sin embargo, son bidireccionales y portan comandos y datos entre el módulo de electrónicos 64 y el aparato de control de iluminación 30. Las líneas de potencia del sistema 144 comunican la potencia eléctrica a las luminarias.

El control de lazo cerrado está provisto para la potencia de lámpara. Para este fin, un controlador de intensidad de bombillo 152 detecta la corriente suministrada al bombillo 130 y la señal de voltaje en el terminal del bombillo. Una señal de realimentación de bombillo 154 es generada por el controlador 152 y suministrada al microcontrolador 150 o se usa para calcular un ciclo de

trabajo deseado para un circuito PWM 156. De esta manera, un esfuerzo de iluminación consistente es realizado.

Mayores detalles del tablero de control de lámparas 120 del módulo de electrónicos 64 se suministra en la FIGURA 4. Como se muestra, un microcontrolador 150 está en comunicación operativa con todos los microcomponentes previamente identificados. El microcontrolador 150 está adaptado para comunicarse con el aparato de control de iluminación de acuerdo con el código de programa almacenado en una porción de memoria del microcontrolador. Más particularmente, el microcontrolador 150 está adaptado para ejecutar el código de programa para llevar a cabo las capacidades de enchufe y juego del sistema de iluminación quirúrgico objeto.

El sistema de control suministra varios niveles de redundancia para poder minimizar la pérdida de potencial de control del sistema de iluminación durante los procedimientos quirúrgicos. Cada uno de los dos suministros de potencia en el centro de control es suficiente para mantener la operación del microcontrolador. Si el microcontrolador o los

interruptores en la unidad de control de pared fallan, entonces las funcionalidades ON/OFF y control de intensidad que pueden llevarse a cabo usan justamente el microcontrolador y los interruptores basados en las luminarias.

La FIGURA 5 es un diagrama de flujo que ilustra una secuencia de autodetección de dispositivo ejecutada por el controlador de la modalidad preferida. Al iniciar la potencia S10, el aparato de control de iluminación 30 interroga cada uno de los microcontroladores 150 y cada una de las luminarias para poder determinar un nivel de revisión del software S12 y la cantidad de luminarias en el sistema S16, su tamaño y estilo, y cualquier otra información que pueda ser derivada al colocar la potencia. Una de tales determinaciones es suministrada por una línea de señal de detección de cámaras 136 (Fig. 3) la cual es leída por el microcontrolador 150 del tablero de control de lámparas 120 al iniciarse la potencia. Cuando un módulo de cámaras 122 está instalado en el módulo de electrónicos 64, la línea de señal de detección de cámaras 136 está amarrada a una tierra lógica. En ausencia de un módulo de cámara, la línea de

señal de detección de cámara 136 se le permite flotar y representa un valor alto lógico.

El microcontrolador 150 incluye código de programa para reportar el estado de la presencia de un módulo de cámara 122 dentro del módulo de electrónicos 64 de la luminaria 44. Otra información también es reportada por el microcontrolador 150 al aparato de control de iluminación 30. Esta información incluye datos con respecto a la versión de software ejecutada por el microcontrolador 150. El sistema de iluminación quirúrgico objeto 10 usa esta información benéficamente para descargar nuevos códigos ejecutables al microcontrolador S14 cuando las versiones de software actualizadas están disponibles. A este fin, el nuevo software es descargado S14 desde el aparato de control de iluminación 30 a los módulos electrónicos separados 60-66 usando las líneas de comunicación y de potencia 36.

Con base en una determinación de los componentes instalados S16, el controlador selecciona un algoritmo entre un grupo de algoritmos para llevar a cabo una función de control. Cuando una cámara de video es detectada, un algoritmo de control de cámara se

selecciona S18, un algoritmo de control de luz de tarea y un algoritmo de control de luz ambiente es seleccionado en las etapas S20 y S22 cuando aquellos dispositivos son detectados por el controlador dentro del sistema. Con respecto a las luminarias quirúrgicas, como se anotó anteriormente, una variedad de tamaños son soportados por el sistema, cada uno preferiblemente controlado de acuerdo con algoritmos separadamente distintos y sintonizados. A este fin, el tipo de luminaria es determinado en la etapa S24 y un algoritmo pequeño de control de luminaria es seleccionado S26, un algoritmo de control de luminaria media es seleccionado S28, y/o un algoritmo de control de luminaria grande es seleccionado S30 con base en la etapa de determinación del tipo de luminaria S24.

La FIGURA 6 muestra una pantalla de usuario 160 presentada en la unidad de control maestro 32 del aparato de control de iluminación 30 del sistema de iluminación quirúrgico objeto 10. Preferiblemente, la unidad de control maestro incluye una LCD de gráficos monocromática con luz de respaldo y un conjunto de interruptores de contacto de membrana 162. Los interruptores de contacto 162 son usados para obtener entradas de usuario manuales

para controlar el sistema de iluminación quirúrgico objeto. Un pulsador ON 164 y un pulsador OFF 166 están provistos juntos con un conjunto de otros botones de control 168 posicionados adyacentes a un área de visualización 170 la cual es programada para solicitar la entrada desde el usuario. El área de visualización 170 esencialmente suministra información visual al usuario humano con respecto a la función de los botones adyacentes 168. La información visual es generada por el software en el control y es útil para redefinir la función de los botones físicos según sea necesario.

Como se muestra en la FIGURA 6, el área de visualización 170 incluye una señal "seleccione la luz" o un área de etiqueta, un área de "intensidad", un área de "luz ambiente ON/OFF", un área de "cámara", y un área de "sistema". Una flecha hacia arriba 172 y una flecha hacia abajo 174 están provistas entre los otros botones de entrada para seleccionar una luminaria entre el grupo. La actuación sea de los botones de entrada hacia arriba o hacia abajo 172, 174 causa que una flecha 176 se muestre en la pantalla del usuario 160 para la transición de uno de tres campos seleccionables 178. En adición, una flecha que disminuye intensidad 180 y una flecha que incrementa

la intensidad 182 son suministradas para permitirle al usuario en el aparato de control de iluminación 30 controlar la intensidad de la luminaria particular seleccionada por la posición de la flecha 176. Como se muestra en la FIGURA 6, el número de luminaria 3 es seleccionado por la flecha 176 y la intensidad se ha establecido al nivel 3.

Un botón de potencia de luz ambiente 190 también está provisto en los interruptores de contacto 162 junto con un icono de luz de ambiente en el área de visualización de modo que los usuarios pueden conmutar la luz ambiente 48 on u off según se desea. Un botón de entrada de cámara 192 también está provisto adyacente a un icono de cámara en el área de visualización 170 para conmutar la operación de la cámara. Por último, un botón de pregunta al sistema 194 es incluido para que los usuarios pregunten al sistema de iluminación quirúrgico información.

Una luminaria es seleccionada usando los botones UP/DOWN 172, 174 bajo la visualización SELECT LIGHT, la intensidad es ajustada con los botones LEFT/RIGHT 180, 182 bajo la visualización INTENSITY. Siete (7) niveles de

potencia predefinidos son codificados de manera fija en una memoria no volátil en la luminaria para cada uno de los siete niveles de intensidad de luz. Las definiciones de nivel de potencia para diversos tipos de voltaje de lámpara son almacenadas en un conjunto de tablas de nivel de potencia en las luminarias. Los indicadores de intensidad 200-208 mostrados en la FIGURA 6, consisten de un número de luminaria 210 seguido por una visualización de siete segmentos de barra progresivos 212. Cuando la lámpara está apagada, no hay segmentos visualizados. Cuando la lámpara está en el nivel de intensidad máximo, todos los siete segmentos se visualizan. Como se muestra en la FIGURA, la lámpara 1 está en potencia completa, la lámpara 2 está apagada, la lámpara 3 está una posición de potencia baja, y la lámpara 4 es ligeramente más brillante que la lámpara 3. A medida que el usuario incrementa la intensidad de la lámpara, segmentos sucesivos se muestran de izquierda a derecha con todos los segmentos precedentes restantes.

Cuando dos o más luminarias son detectadas en el sistema, el indicador ALL LIGHTS 214, mostrado en la FIGURA es desplegado en la pantalla de control de luz. Cuando el indicador ALL LIGHTS se ha seleccionado usando los

botones UP/DOWN 172, 174 bajo la visualización SELECT LIGHT, el control y la intensidad de todas las luminarias detectadas sigue una secuencia operacional predefinida. Esencialmente, cuando el indicador ALL LIGHTS es seleccionado y la intensidad derecha 182 o el botón hacia arriba es seleccionado, todas las lámparas inmediatamente incrementan al siguiente nivel mayor de intensidad. Contrariamente, cuando las flechas left 180 o down son presionadas, todas las lámparas en el sistema inmediatamente disminuyen en intensidad al siguiente nivel inferior.

Las lámparas primaria y secundaria para la luminaria son designadas como "A" y "B" con "A" entendiéndose como la localización de la lámpara primaria. En el sistema de la modalidad preferida como se anotó anteriormente, las lámparas están monitoreadas continuamente sin importar si están en ON o en OFF. Cuando falta una lámpara o se ha quemado, un indicador de falla de lámpara 220 se muestra y hace titilar ON y OFF a una velocidad preseleccionada, preferiblemente una velocidad de dos segundos con un cincuenta por ciento de ciclo de trabajo.

Con referencia continuada a las figuras de los dibujos, el sistema detecta automáticamente la instalación de una luz de tarea manual como se describió anteriormente. Para este fin, una visualización de intensidad de luz de tarea 208 es suministrada junto con un indicador de vida de lámpara 230. El indicador de intensidad consiste de una pantalla de siete segmentos 212 en la forma de un gráfico de barras similar a la pantalla suministrada para las luminarias. A medida que el usuario incrementa la intensidad de la lámpara, segmentos sucesivos son mostrados o se iluminan de izquierda a derecha con todos los segmentos precedentes permaneciendo encendidos.

En adición, un indicador de vida de lámpara de luz de tarea 230 es presentado al operador para indicar la vida restante de la lámpara usada en la luz de tarea manual. Un medidor de barras progresivo 232 se mueve hacia la derecha como se muestra en la figura de los dibujos a medida que la luz de la lámpara va disminuyendo. La barra está calibrada preferiblemente para 0 horas a la izquierda y 500 horas en la escala completa hacia la derecha. Después de que el gráfico de barras alcanza 400 horas de vida del bombillo, la barra de progreso comienza a titilar a una velocidad predeterminada, preferiblemente

una velocidad de dos segundos con un cincuenta por ciento de ciclo de trabajo. Después de que se ha alcanzado las 500 horas, una visualización gráfica de la lámpara con una cruz tachándola es indicada y comienza a titilar para atraer la atención del operador. A las 500 horas una entrada de registro de falla es hecha la cual indica que el número de horas de la lámpara usada en la luz de tarea manual ha excedido un límite operacional predeterminado.

En adición, un icono de visualización de batería de respaldo es presentado para visualizar la vida restante de la batería de respaldo.

La FIGURA 7 muestra un submenú 250 presentado por el sistema de control objeto cuando el botón debajo del icono "cámara" 234 (FIGURA 6) es operado. Como se muestra, las claves de función seleccionadas 172, 174 son usadas para cambiar la posición de una flecha 176 para seleccionar diversas opciones de control de cámara incluyendo potencia 252, acercamiento 254, giro 256, ajuste de brillo 258, y un foco de cámara 260.

REIVINDICACIONES

Habiendo así descrito las modalidades preferidas, la invención es ahora reivindicada así:

1. Un sistema de iluminación quirúrgico (10) que comprende:
 - una luminaria (44) acoplada a un brazo de suspensión (41') adaptado para ser montado a una superficie (14) de un cuarto quirúrgico;
 - un bombillo (130) en dicha luminaria;
 - un procesador (120) en dicha luminaria acoplado operativamente con el bombillo para controlar una intensidad de luz del bombillo y siendo adaptado para generar una señal de estado de luminaria representativa de un primer estado de dicha luminaria; y
 - un aparato de control (32, 34) en comunicación operativa con dicho procesador en dicha

luminaria, el aparato de control que recibe dicha señal de estado de luminaria y selecciona un conjunto de algoritmos de control entre un grupo de algoritmos con base en dicha señal de estado de luminaria para controlar dicha luminaria.

2. El sistema de iluminación quirúrgico de acuerdo con la reivindicación 1 en donde dicho primer estado de dicha luminaria incluye por lo menos uno entre:

- Un tamaño de dicha luminaria;
- una intensidad (154) de luz de dicho bombillo;
- una condición de dicho bombillo;
- un nivel de corriente (150) aplicado a dicho bombillo;
- un nivel de voltaje (150) aplicado a dicho bombillo;
- una temperatura interna de dicha luminaria;
- una presencia de una cámara de video;
- una presencia de una luz de tarea quirúrgica manual;
- una presencia de una luz ambiente controlable.

3. El sistema de iluminación quirúrgico (10) de acuerdo con la reivindicación 2 en donde:
 - dicho aparato de control (32, 34) está adaptado para generar una señal de pregunta; y
 - el procesador (120) está adaptado para generar dicha señal de estado de luminaria en respuesta a recibir dicha señal de pregunta.
4. El sistema de iluminación quirúrgico (10) de acuerdo con la reivindicación 3 incluye adicionalmente un enlace de comunicación de datos serial (36, 80, 82) para llevar dicha señal de pregunta y dicha señal de estado de luminaria entre dicho procesador y dicho aparato de control.
5. El sistema de iluminación quirúrgico (10) de acuerdo con la reivindicación 4 en donde dicho aparato de control (32, 34) incluye una pantalla LCD (160) para visualizar dicho primer estado.

6. El sistema de iluminación quirúrgico (10) de acuerdo con la reivindicación 1 en donde:

- el aparato de control está adaptado para generar una señal de comando; y,
- el procesador en la luminaria está adaptado para controlar la intensidad de luz de acuerdo con la señal de comando.

7. El sistema de iluminación quirúrgico de acuerdo con la reivindicación 1 en donde dicho procesador en dicha luminaria está adaptado para:

- recibir código de programa desde dicho aparato de control; y,
- ejecutar dicho código de programa.

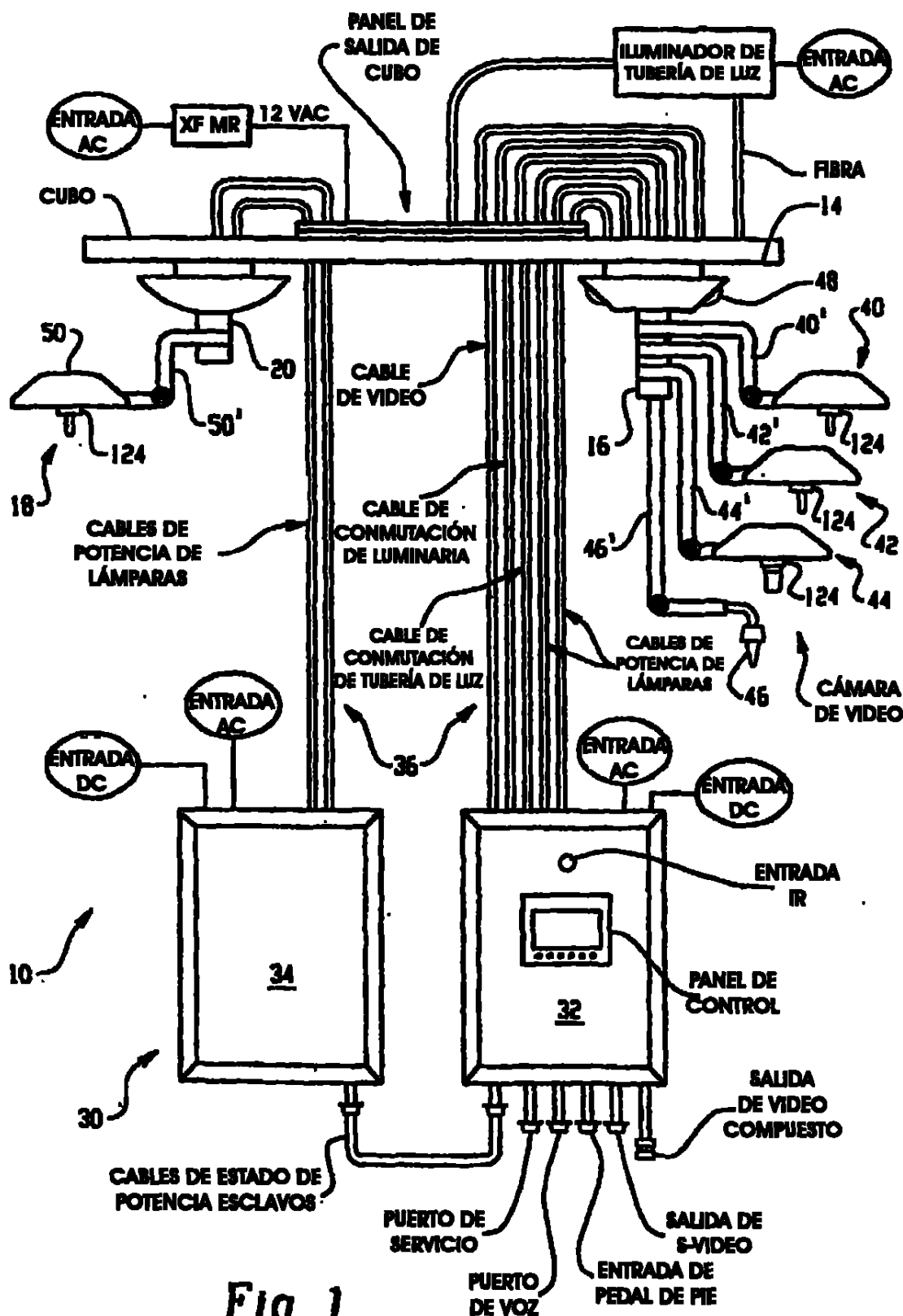
8. El sistema de iluminación quirúrgico de acuerdo con la reivindicación 7 en donde:

- dicho aparato de control está adaptado para determinar una compatibilidad operacional de dicho procesador en dicho sistema de iluminación quirúrgico con base en dicha señal de estado de luminaria recibida; y,
 - cuando el procesador no es compatible para uso en el sistema de iluminación quirúrgico, descargar dicho código de programa ejecutable al procesador.
9. El sistema de iluminación quirúrgico de acuerdo con la reivindicación 1 incluye adicionalmente una cámara asociada con dicha luminaria y operativamente acoplada con dicho aparato de control, la cámara genera una imagen de señal adaptada para conversión por un dispositivo de monitor de video asociado a una imagen legible por humanos, el aparato de control incluye medios para controlar las funciones de dicha cámara incluyendo el balance de blanco, congelamiento del cuadro, visualización de la hora, y visualización de la fecha.

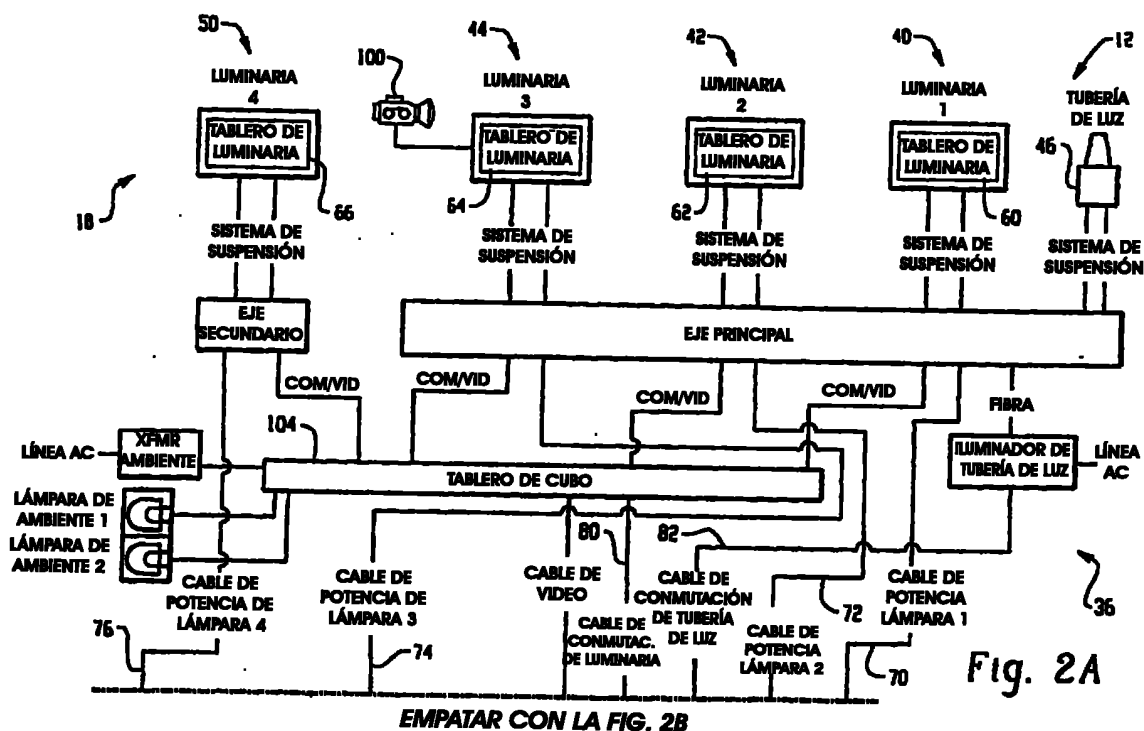
10. El sistema de iluminación quirúrgico de acuerdo con la reivindicación 9 en donde el aparato de control está adaptado para detectar una presencia de dicha cámara y enrutar dicha señal de imagen a un puerto en el aparato de control adaptado para la conexión al dispositivo de monitor de video asociado.
11. El sistema de iluminación quirúrgico de acuerdo con la reivindicación 1 incluye adicionalmente:
 - un primer botón de control de intensidad de luz en dicha luminaria y un segundo botón de control de intensidad de luz en dicho aparato de control, dicho procesador responde tanto a dichos primer y segundo botones de control de intensidad de luz.
12. El sistema de iluminación quirúrgico de acuerdo con la reivindicación 1 incluye adicionalmente un dispositivo de cámara de video quirúrgica (100) adaptada para generar una señal de video, en donde:

- dicho procesador (120) en dicha luminaria está adaptado para generar una señal de presencia de cámara de video; y,
 - dicho aparato central (32, 34) está adaptado para recibir la señal de presencia de cámara de video y seleccionar un algoritmo de control de cámara entre dicho grupo de algoritmos para controlar dicho dispositivo de cámara de video quirúrgico (100).
13. El sistema de iluminación quirúrgico de acuerdo con la reivindicación 12 incluye adicionalmente una pantalla legible por humanos (160) para visualizar información relacionada con dicha señal de estado de luminaria y dicho dispositivo de cámara de video.

9x



28



EMPATAR CON LA FIG. 2B

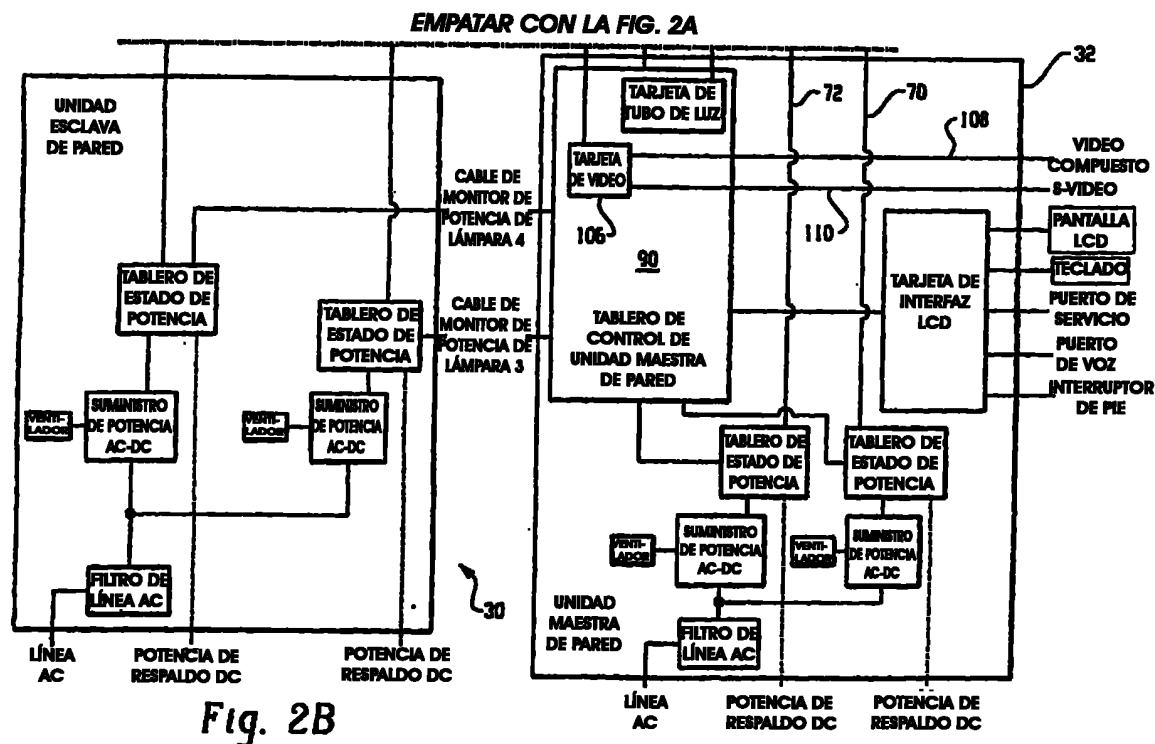


Fig. 2B

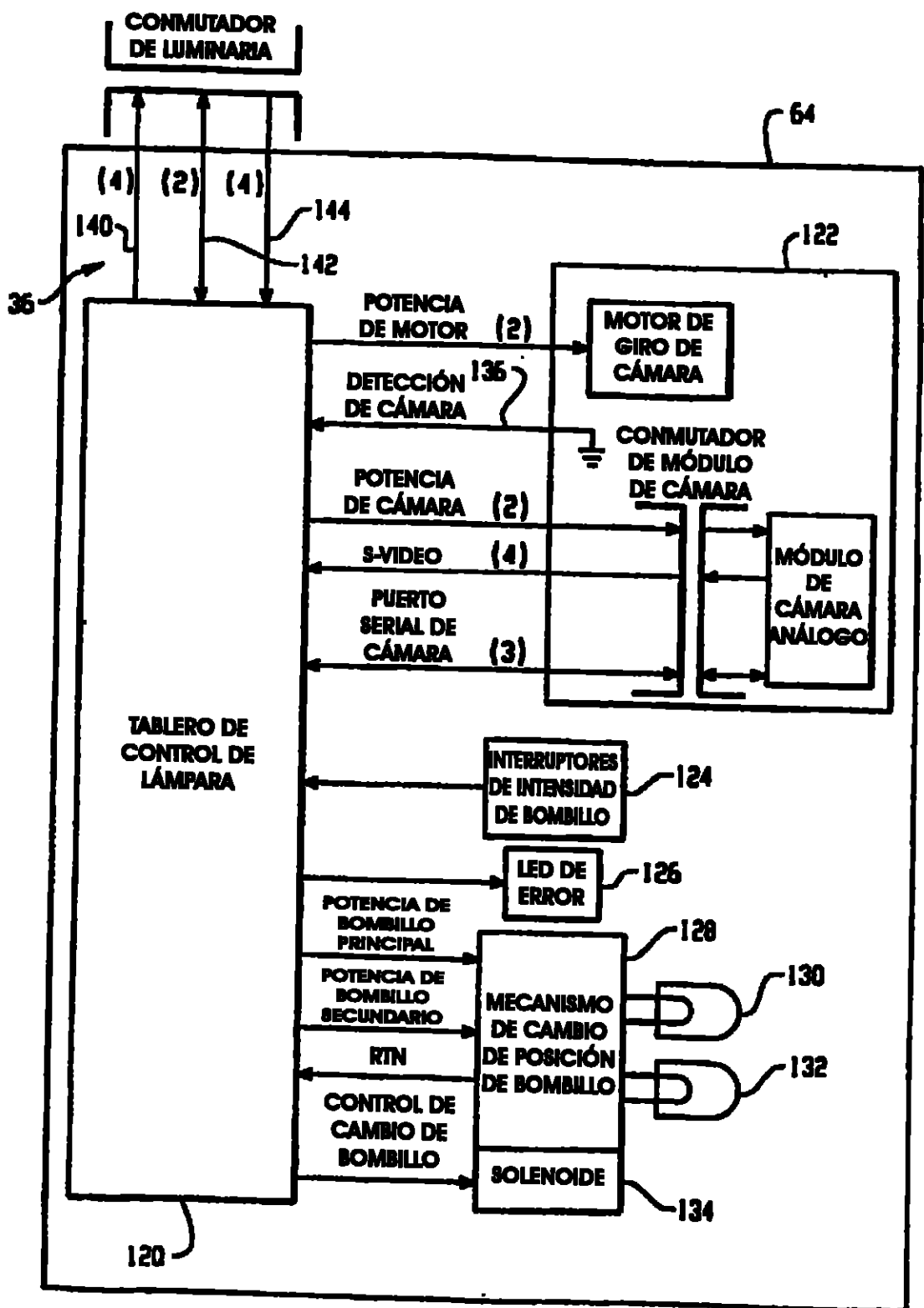


Fig. 3

98

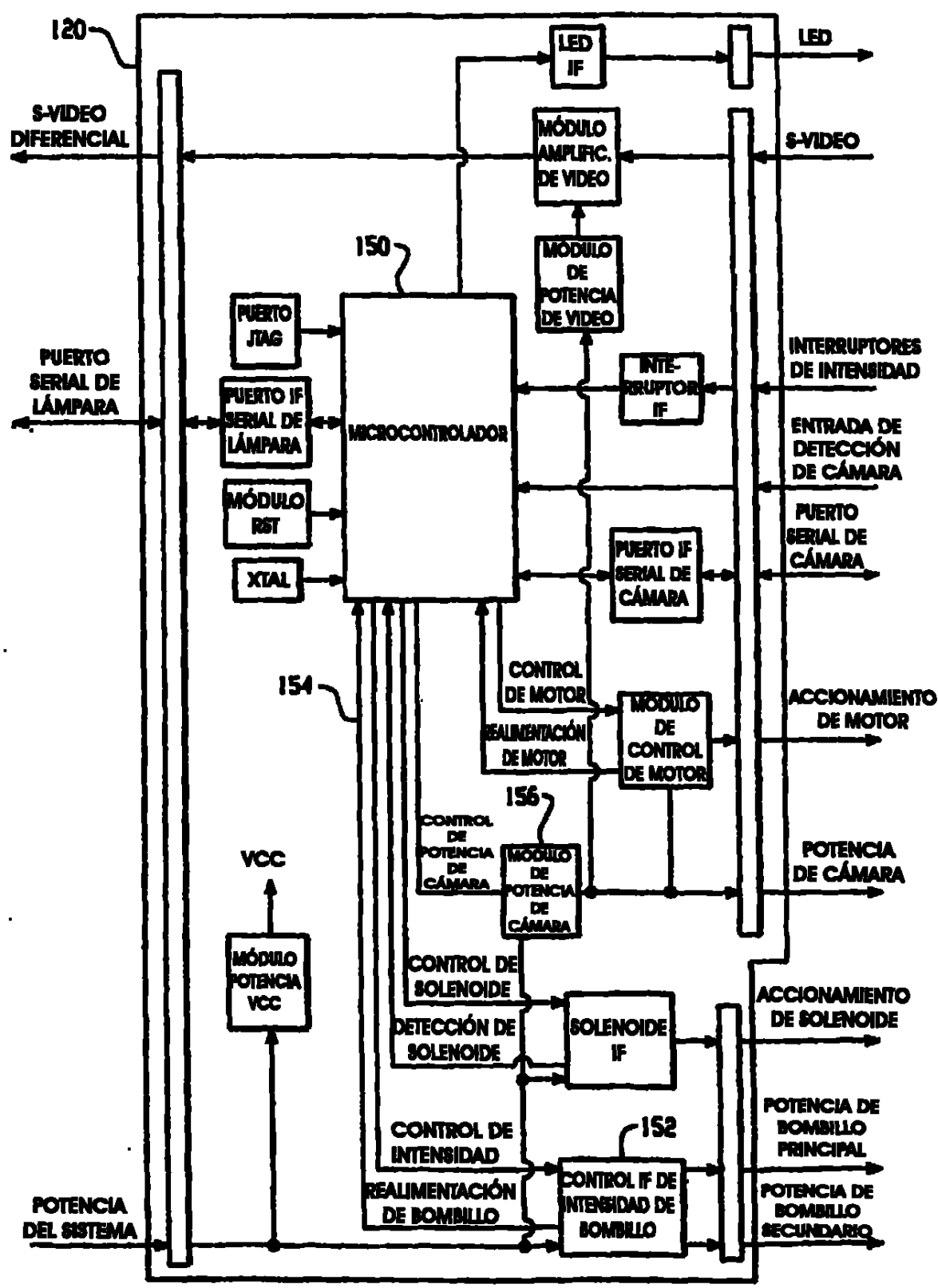


Fig. 4

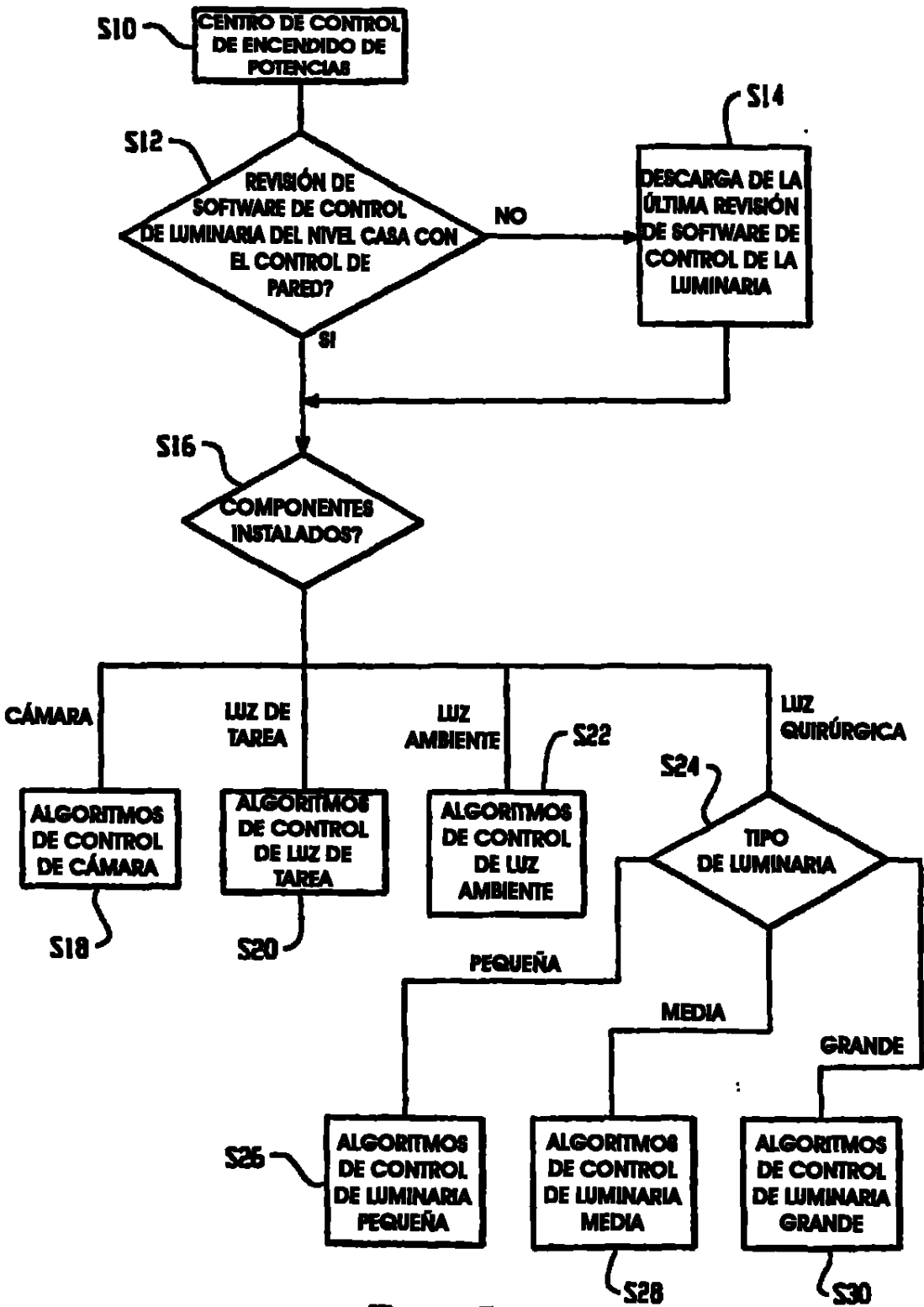


Fig. 5

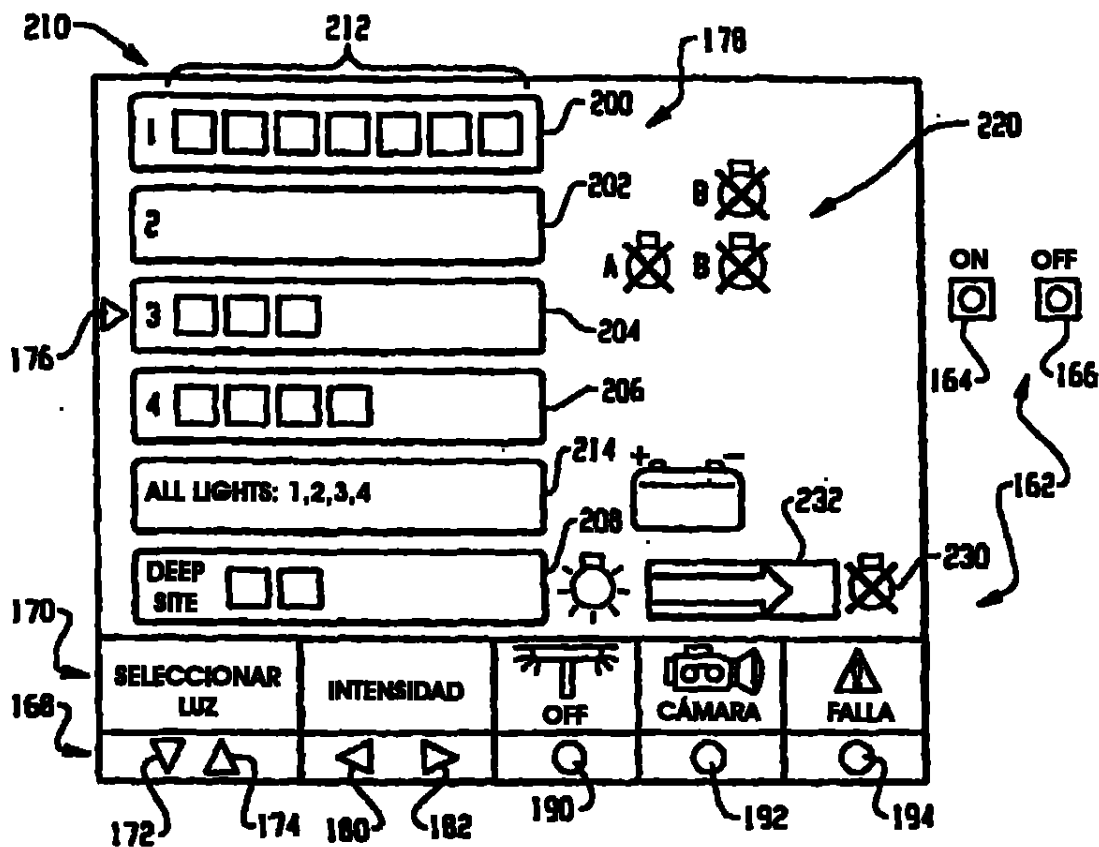


Fig. 6

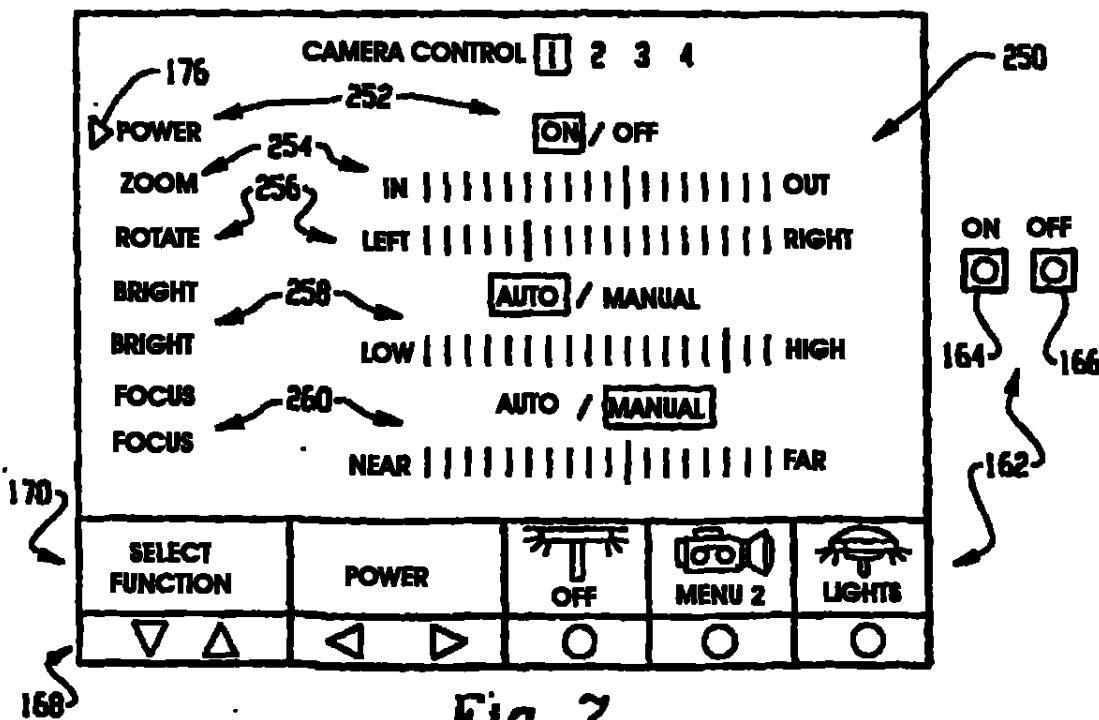


Fig. 7

Expediente No		No de Folio
04078342		
No de unidades		✓
1	CD	
2	DVD	
3	REVISTA	
4	LIBRO	
5	PERIODICO	
6	DISQUETES	
7	SOBRE DE MANILA	
8	SOBRE BLANCO TAMAÑO CARTA	✓
9	SOBRE BLANCO TAMAÑO OFICIO	
10	OTROS:	

Observaciones:

Contiene 1 figura de alto final

102

SUPERINDUSTRIA Y COMERCIO
Radicacion : 84878342 88888888 Folios: 102
Fecha (IMP): 2004-08-11 17:11:38
Tramite : 811 PCT-PATENT 379 FASE NACI 411 PRESENTAC
Dependencia: 8828 DIVISION DE NUEVAS CREACIONES

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 04 - 60,326
FECHA : AGOSTO 2 DE 2004

CONSIGNACION

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. RAGO	FECHA PGO	Vr. PAGO
CAVELIER ABOGADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	23490084	02/08/2004	17,010,800.00

CONCEPTO

CANT. RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1 50003-01-01 SOLICITUDES	1 TRAMITES DE SOL. DE PATENTE DE IN	422,000.00
	TOTAL :	422,000.00

SOM: CUATROCIENTOS VEINTIDOS MIL PEROS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No. _____

Ob 14383-841-001-5

REQUISITOS NECESARIOS PARA PRESENTACION Y AGILIZACION DEL TRAMITE

	USUARIO	RADICADOR
PATENTE DE INVENCION 	()	() 
- Indicación de que se solicita la concesión de una patente	()	() 
- Datos de identificación del solicitante o de la persona que se presenta la solicitud.	()	() 
- Descripción de la invención	()	() 
- Dibujos de ser estos pertinentes.	()	() 
- Comprobante de Pago de las tasas establecidas.	()	() 

COMPLETA () **INCOMPLETA** ()

DISEÑO INDUSTRIAL ()

- | | | |
|---|-----|-----|
| - Indicación de que se solicita el registro de Diseño Industrial | () | () |
| - Datos de identificación del solicitante o de la persona que presenta la solicitud | () | () |
| - Representación gráfica o fotográfica del Diseño Industrial o muestra del Material que incorpora el diseño | () | () |
| - Comprobante de pago de las tasas establecidas | () | () |

COMPLETA () **INCOMPLETA** ()

ESQUEMA DE TRAZADO ()

- | | | |
|---|-----|-----|
| - Indicación de que solicita el registro de un Esquema de trazado | () | () |
| - Datos de identificación del solicitante o de la persona que presenta La solicitud | () | () |
| - Representación gráfica del esquema de trazado | () | () |
| - Comprobante de pago de las tasas establecidas | () | () |

COMPLETA () **INCOMPLETA** ()

Firma Responsable



Fecha

2020
Bogotá D C

Doctor(a)
EMILIO FERRERO
Apoderado

Oficio N° 08452

ASUNTO:

Radicación N	04-78342
Solicitud internacional	PCT/US03/01138
Fecha inicio fase nacional	15/08/2004
Trámite	011
Evento	379
Actuación	416
Folios	001

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

- La solicitud no contiene copia del documento en que consta la cesión del derecho de patente del inventor al solicitante o a su causante (Art. 26-k) Decisión 486).
- La solicitud no contiene el poder debidamente otorgado, con el lleno de requisitos exigidos por los artículos 63 y subsiguientes del Código de Procedimiento Civil. Adicionalmente deberá presentar el documento que acredita la existencia y representación legal de la sociedad solicitante, cuando éste fuere una persona jurídica.

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.

ALIX CARMENZA CÉSPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones.

El anterior requerimiento fue notificado por fijación en lista de fecha,

202051

10 SET. 2004

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Bogotá D.C. - Colombia

10/18/04