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㉙ **Remote control of window blinds and the like.**

㉚ A remote control system for a venetian blind having a headrail and movable slats which can be tilted and raised and lowered comprises electric motor carried by the headrail and coupled to the slats for effecting movement thereof when the motor is energised, and a signal receiver accommodated in the headrail and connected to the motor for energising the motor upon reception of a predetermined infrared actuating signal from a remote hand-held transmitter. The receiver may respond to the actuating signal during an initial period to energise the motor to tilt the slats and thereafter to translate the slats. The transmitter may transmit a selected one of a plurality of different actuating signals and the receiver may be settable to respond to a respective actuating signal to enable a plurality of adjacent blinds to be actuated independently.

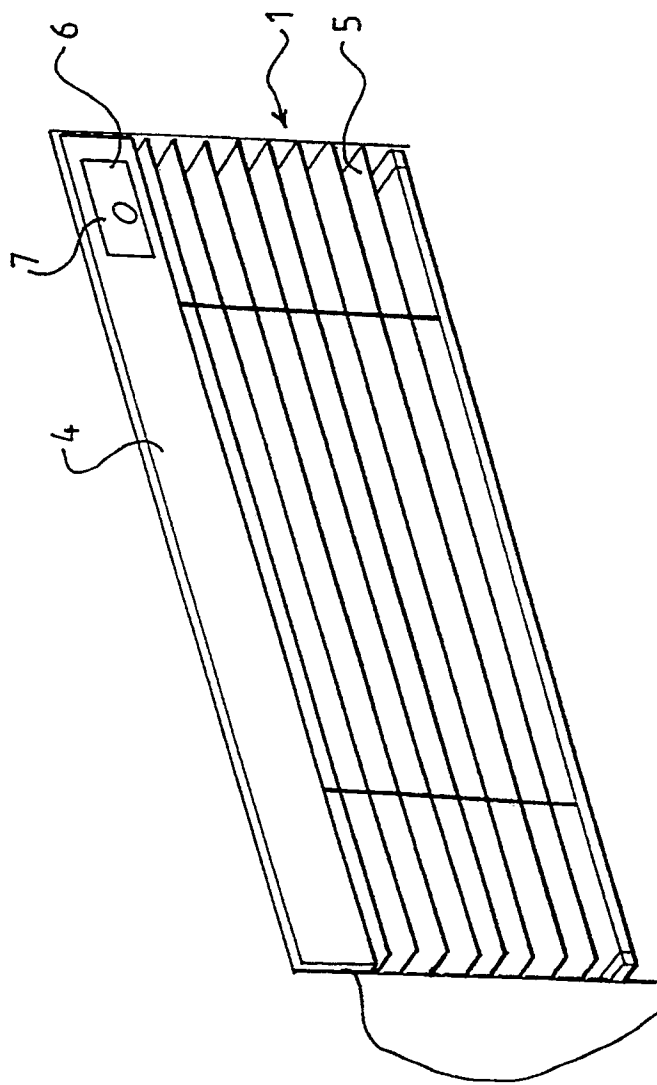
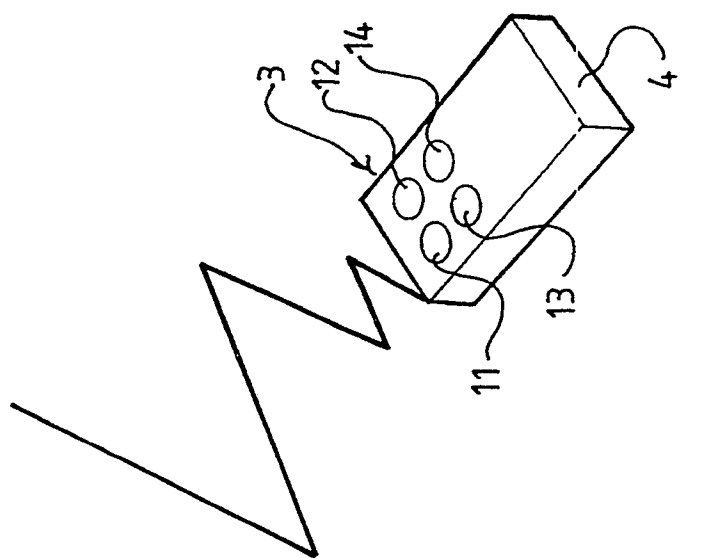


FIG 1



THIS INVENTION relates to improvements in or relating to the remote control of window blinds and like equipment having movable screening elements. The invention finds particular application in the case of venetian blinds, but it is envisaged that the invention will also find application in the case of electrical venetian louver blinds, electrical roller blinds, electrical curtain tracks, electrical winter gardens, electrical festoon curtains and

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plafonds.

According to the invention, in one aspect thereof, there is provided a remote control system for a window blind or the like having a headrail and a movable screening element supported for movement between two end positions, which system comprises electric motor means carried by the headrail and coupled to the movable element for effecting movement thereof when the motor means is energised, a signal receiver carried by the headrail and connected to the motor means for energising the motor means upon reception of a predetermined actuating signal, and a hand-held transmitter for transmitting the actuating signal to the receiver from a remote location.

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In a preferred embodiment of the invention, the movable element is tiltably supported and the electric motor means is energised only for the period during which the signal receiver receives the predetermined actuating signal, so that the angle of tilt of the movable element can be selected by ceasing transmission of the actuating signal upon the desired angle of tilt being reached.

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The movable element may be supported for translational movement relative to the headrail and the receiver may maintain the electric motor means energised until the movable element reaches one of its end positions.

In a further embodiment of the invention, the movable element is supported for tilting movement and for translational movement relative to the headrail, the receiver responding to a transmitted actuating signal during a predetermined initial period to energise the motor means for tilting of the slats and thereafter responding to a received actuating signal to energise the motor means for translating the movable element.

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The present invention finds particular application in the case of venetian blinds comprising a plurality of movable screening elements in the form of slats which can be tilted and raised and lowered.

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The transmitter of the system may be adapted to transmit two different actuating signals to enable two adjacent blinds to be actuated independently.

The signal receiver may include a receiving eye unit for location in spaced relation to an obscured headrail so as to be in a position to receive the actuating signal.

According to the invention, in another aspect thereof, there is provided a remote control system for a window blind or the like having a headrail and a movable screening element supported for tilting movement and for translational movement relative to the headrail, which system comprises electric motor means coupled to the movable element for effecting movement thereof when the motor means is energised, a signal receiver connected to the motor means for energising the motor means upon reception of a predetermined actuating signal, and a hand-held transmitter for transmitting the actuating signal to the receiver from a remote location, the receiver responding to a transmitted actuating signal during a predetermined initial period to energise the motor means for tilting of the slats and thereafter responding to the actuating signal to energise the motor means for translating the movable element.

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According to the invention in a further aspect there is provided a remote control system for a window blind or the like having a headrail and a movable screening element supported for movement between two end positions, which system comprises electric motor means coupled to the movable element for effecting movement thereof when the motor means is energised, a signal receiver connected to the motor means for energising the motor means upon reception of a predetermined actuating signal, and a hand-held transmitter for transmitting the actuating signal to the receiver from a remote location, the transmitter having control means for initiating transmission of one of a plurality of actuating signals on a corresponding signalling channel and selecting means for selecting the actuating signal for transmission by the control means, and the signal receiver having setting means for setting the receiver to respond to a selected one of the actuating signals transmitted on the signalling channel, thereby enabling operation of a plurality of different blinds by the same control means of the same transmitter.

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In an embodiment of the invention the transmitter comprises a plurality of control means each for transmitting a selected one of a plurality of actuating signals on a respective transmission channel, and the setting means of the signal receiver comprises means for setting the receiver to respond to a selected actuating signal on a selected signalling channel.

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A remote control system embodying the present invention may be arranged to control both high and low voltage equipment.

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Preferably, the transmitted actuating signal is an infrared signal.

An indicator is desirably mounted on the headrail to indicate the direction of movement of the movable element initiated by the actuating signal.

In order that the invention may be more readily understood, embodiments thereof will now be described,

by way of example, with reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic illustration of one remote control system embodying the invention for controlling venetian blinds;

Figure 2 is a circuit diagram of a transmitter of the Figure 1 system;

5 Figure 3 is a circuit diagram of an actuating signal receiver of the system of Figure 1;

Figure 4 is a diagram of a simplified transmitter for use in controlling the tilting movement of translational movement only of venetian blinds;

Figure 5 illustrates a signal receiver provided with a separately positionable receiving eye;

10 Figure 6 is a diagrammatic illustration of a remote control system embodying the invention for controlling electrically operated venetian blinds operating with high or low voltage;

Figure 7 is a diagrammatic illustration of the signal transmitter and receiver of another remote control system for venetian blinds having six different actuating signals, the figure illustrating the setting of the receiver for operation by a first pair of control buttons transmitting a plurality of actuating signals in a first transmission channel;

15 Figure 8 illustrates the setting of the receiver for operation by a selected one of the actuating signals on the first transmission channel;

Figure 9 illustrates the setting of the receiver for operation with a venetian blind having slats which are only tiltable or slats which can be tilted and raised and lowered; and

Figure 10 is a circuit diagram of the actuating signal receiver of Figures 7 to 9.

20 Referring firstly to figure 1, one embodiment of the present invention comprises an electrically operated venetian blind 1, a power supply unit 2 for the venetian blind 1 and a hand-held control unit 3 for remotely transmitting actuating signals to control the venetian blind 1 by effecting tilting and raising and lowering movements of the slats of the blind.

25 The venetian blind 1 comprises a headrail 4 for mounting in conventional manner in a desired position in an opening (not shown) to be screened and movable slats 5 which are supported for tilting movement and for translational raising and lowering movement relative to the headrail 4. Motor means (not shown) contained within the headrail 4 is coupled to the slats 4 to effect tilting or raising and lowering movement of the slats under the control of an infra-red receiving unit also mounted in the headrail 4. The receiving unit (not visible in Figure 1) has a receiving window 6 through which infra-red signals pass to a detector of the receiving unit. A light emitting diode 7 is displayed in the window and emits green light when the receiving unit is activated to move the slats 5 in one direction and emits a red light when the receiving unit is activated to move the slats 5 in the other direction.

30 The power unit 2 comprises a casing 8 from which project three conventional flat contact pins 9 arranged so that the power unit can be simply plugged into a standard 13 amp electrical outlet. The power unit supplies electrical power to the electrical components contained in the headrail 5 via a flexible lead 10.

35 The infrared transmitter 3 comprises a housing 4 on which are mounted four operating buttons 11 to 14. Operating buttons 11 and 13 are associated with a first signalling channel to which the venetian blind 1 is responsive and buttons 12 and 14 are associated with the second signalling channel to which a second venetian blind (not shown) is responsive. Button 11 serves to transmit a first infrared actuating signal from the first channel for tilting the slats 5 and causes tilting movement of the slats 5 only as long as button 11 is maintained depressed. Button 13 causes the transmitter to transmit a second actuating signal on the first channel which effects raising or lowering movement of the slats, depending upon the current lowered or raised condition of the slats, a single depression of the button 13 causing the slats to be moved from one end position to the other. The buttons 12 and 14 cause corresponding infrared actuating signals to be transmitted on the second signalling channel.

40 Figure 2 is a circuit diagram of circuitry for implementing the hand-held transmitter 3. the Figure 2 circuit is based on a type MV500 integrated circuit 20 having its pin 1 connected to the base of a type ZTX649 transistor 21 connected across a 9 volt power supply (battery). The collector circuit of transistor 21 contains a pair of infrared light emitting diodes 22 and 23 connected in series with a resistor 24.

50 A ceramic resonator 25 with associated capacitors 26 and 27 is connected across pins 16 and 17 of the integrated circuit 20. The transmission channel is determined by a pair of control switches 28 and 29 connected respectively to the pins 14 and 15 of the integrated circuit 20. Pin 14 is connected to zero volts by a time constant circuit consisting of resistor 30 and a capacitor 31. Pin 15 is connected to zero volts by a time constant circuit consisting of resistor 32 and capacitor 33. In one position, each of switches 28 and 29 connects the respective pin 14 and 15 to the nine volt rail. In the other position, switches 28 and 29 connect their respective pins 14 and 15 directly to zero volts.

55 The push buttons of the transmitter are connected respectively between pins 6 and 13, pins 7 and 12, pins 8 and 11 and pins 9 and 10, so as to short the chip through a resistor 35 which switches on the transistor and

energises the infrared emitting diodes. the transmission channel is selected by switches 28, 29.

Figure 3 is a circuit diagram of the receiving unit housed in the headrail 4 of the venetian blind behind the window 5. This receiving unit comprises an infrared detector 40 in the form of a diode arranged to be illuminated by a transmitted signal admitted through the window 5 and rendered conductive by the transmitted signal from the transmitter 3. Any output from the detector 40 is amplified by an amplifier 41 and passed to a discriminating circuit 42 and determines whether the received signal is on the first channel or the second channel. If a signal on the first channel is received, then an output is applied to a first output 43 and, if the received signal is in the second channel, an output signal is applied to a second output 44. This output signal from the discriminating means 42 is applied to the electrical motor means (not shown) which is selected to operate in response to signals on either the first channel or the second channel by the setting of a change over switch (not shown) at the output of the discriminating circuit 42. The output signal applied to the output 43 or 44 of the discriminating device 42 is either a momentary signal which operates the motor for as long as the transmitted signal is received or a latched output signal which actuates the motor until the motor has driven the slats 5 to one of their fully raised or lowered positions, at which times the motor is deenergised by a microswitch (not shown). The mode of operation of the discriminator circuit 42 is determined by a change over switch (schematically shown as switch 50) which serves to connect or disconnect a latching circuit 47 from the discriminator circuit 42. With the latching circuit 47 disconnected from the discriminating circuit 42, the output of the discriminating circuit is a momentary signal. When the latching signal is connected to the discriminating circuit, the output signal produced by the discriminating circuit is initially a momentary signal which, after a predetermined delay (for example four seconds) changes to a latched output signal.

In Figure 3 the amplifier 41 is constituted by an SL486 integrated circuit which has the detector 40 connected between pins 1 and 16 and which delivers an output on line 48 connected to pin 9 when the detector 40 is illuminated by infrared light. Line 48 is connected to pin 1 of an MV601 integrated circuit constituting the discriminating circuit 42. A 500B ceramic resonator 49 is connected across pins 6 and 7 of the discriminating circuit 42 and serves to detect signal received from the amplifier 41.

Latching circuit 41 is connected between pins 10 and 5 of the discriminating circuit 42 and is rendered operative by closing switch 50 connected to pin 5 of the discriminating circuit. The latching circuit is based on a CMOS quad 2 input NAND gate constituted by a type 4011B integrated circuit 31. Pin 10 of discriminating circuit 42 is connected to the base of a first transistor 52 which, together with a resistor 53 connected to its collector and a capacitor 54 connected across its collector and emitter, constitutes a delay circuit. The junction of resistor 53 and capacitor 54 is connected to pins 1 and 2 of the NAND gate 51.

Pin 10 of the discriminating circuit 42 is also connected to the base of a second transistor 55 having its collector connected via capacitor 56 and diode 57 to pin 9 of the NAND gate 51. Pin 11 of NAND gate 51 is connected to pin 5 of discriminating circuit 42 via the switch 50.

With the switch 50 in its open position, the discriminating circuit produces an output signal on a selected one of its outputs 43 and 44 depending upon the channel of the infrared signal received by detector 40, the output signal being of a momentary form which disappears when the signal illuminating detector 40 ceases.

With the switch 50 in its closed condition, the detection of an actuating signal by a detector 40 causes an output signal on pin 10 of discriminating circuit 42 which causes capacitor 54 to charge up slowly. While the capacitor is charging, the NAND gate 51 produces no output signal to the discriminating circuit 42 which accordingly functions in the momentary mode. Upon the capacitor 54 discharging, the NAND gate 51 is switched to actuate a min-relay (not shown) and the output of the NAND gate 51 on pin 11 changes and switches the output of discriminating circuit 42 to a continuous signal which may, however, be terminated by the detector 20 receiving another signal which will via transistor 55 cause the min-relay to disengage.

Figure 4 illustrates a simplified version of the transmitter circuit shown in Figure 2 for use where a single channel actuating signal is sufficient. This circuit omits the time constant circuits 30, 31 and 32, 33 and the control switches 28, 19.

In certain circumstances, the venetian blind may be installed in a position where the headrail 4 is obscured, for example, if the venetian blind were fitted behind a suspended ceiling which extended downwardly below the headrail 4.

Figure 5 shows a receiving unit which may be used to overcome this problem and which comprises a receiving eye 60 connected to the main receiving unit 61 by a flow 62. The main receiving unit 60 may then be accommodated in the headrail 4 in the usual way and the eye 60 mounted separately at a location, eg on the ceiling near the blind, so that it can receive the signals transmitted from the transmitter 3.

Figure 6 shows how a remote control system embodying the invention may be applied to control both high (240 volt) and low (9 volt) blinds. In this case, the 240 volt power supply is applied directly to the receiving unit and to a low power unit 65 which is connected to the receiving unit to provide power for operating low voltage blinds 66.

Figures 7 to 10 illustrate another remote control system embodying the invention which is constituted and installed in a similar manner to the Figure 1 embodiment. However, the embodiment of Figures 7 to 10 provides three distinct operating signals on each of two transmission channels, thereby enabling six adjacent venetian blinds to be operated independently by arranging for each blind to respond to a selected one of the actuating signals.

As shown in Figure 7, the remote control system comprises a hand-held transmitter 101 for transmitting infrared actuating signals and an infrared receiving unit 102 mounted in the headrail of a venetian blind (not shown) so as to receive signals from the transmitter 101 through a receiving window (not shown).

The transmitter 101 comprises a housing 103 on which are mounted four operating buttons 104-107, a three-position sliding selecting switch 108 and an indicator LED 109. The operating buttons 104 and 105 are associated with a first signalling channel and the buttons 106 and 107 are associated with a second signalling channel. Button 104 serves to transmit a first infrared actuating signal on the first channel for tilting the slats of the venetian blind and the button 105 causes the transmitter to transmit a second actuating signal on the first channel which effects raising or lowering movement of the slats. The buttons 106 and 107 cause corresponding actuating signals to be transmitted on the second channel. The transmitter 101 is capable of transmitting actuating signals of three different frequencies on each of the first and second channels, each frequency being selected by a respective position of the selecting switch 108. Which of the three frequencies is selected is indicated by the LED 109 which emits orange light in the left-hand position of the switch 109, red light in the middle position of the switch 109 and green light in the right-hand position of the switch 109.

The receiving unit 102 can be set to respond to either of the first and second transmission channels by setting a pair of two-position switches 110 and 111, the first channel being selected in the left-hand position of switches 110 and 111 illustrated in Figure 7. Operation of the receiving unit by actuating signals on the second channel is selected by moving the switches 110 and 111 into their right-hand position.

Which of the three frequencies of the selected transmission channel operates the receiving unit 102 is selected by a two pin selecting plug 112 which selectively connects a common contact 114 to one of three selection contacts 115, 116 and 117. With the selecting plug 112 in the middle position shown in Figure 8, the receiving unit is set to respond to the first of the three frequencies corresponding to the left-hand position of selecting switch 108 on the transmitter 101.

In addition to setting of the receiving unit 102 for response to a particular one of the six transmission frequencies, the receiving unit can be set for selective operation of a blind which can only be tilted or a blind which can be both tilted and raised and lowered. This is achieved by setting a blind selecting switch 118 (see Figure 9). Positioning of the switch 118 in the right-hand position illustrated in Figure 9 sets the receiving unit 102 so that it responds only to tilt commands transmitted by the respective operating button 104 or 106. Setting of the switch 118 in its left-hand position sets the receiving unit 102 to respond to both tilt and raise and lower commands transmitted by the respective pairs of operating buttons 104 and 105 or 106 and 107.

Referring now to Figure 10, the receiving unit 102 comprises an infrared detector IC 120 (MV601 type) which delivers a selected output to a latching IC circuit 121 (4043B type) in turn delivers an output to control a motor drive circuit 122 for the motor in the headrail of the venetian blind.

The motor drive circuit 122 is controlled by two signals from the infrared receiver 120. These signals represent the forward and reverse motor drive signals which are finally used to switch the motor relays RL1 and RL2.

The latch circuit 121, which is a Quad NOR latch, operates in two modes, temporary latching (momentary) and full latching (latching).

The specific motor drive signal pair is selected by switches 110, 111. This allows one of two pairs of signals from detector 120 to be passed to the latch circuit 121, corresponding respectively to the first and second channels. A choice of one out of three reception rates is enabled by plug 112 thus allowing an overall choice of one from six possible actuating signal pairs to be selected.

The motor drive signals (referred to as the drive signals) are filtered by capacitors C13 and C12 to provide a rectified DC component of the pulsed input signal, ie the signals at diodes D3 or D4 appear to be at a logic 1 (+5V) for the period during which a button on the transmitter 101 are present.

The smoothed drive signal pair then form the SET input signals for two R8 latches in latch circuit 121 at the pins 12 and 14 of the IC.

The smoothed drive signals are simultaneously used to drive the RED and GREEN anodes of a three-colour LED 123 via two series resistors R3 and R4. The drive signals can take on any one of four possible logic combinations, ie

	Drive Pair logic		LED status
	Sig A	Sig B	
5	Ø	Ø	Not illuminated
	Ø	1	RED
	1	Ø	GREEN
	1	1	ORANGE

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As a result, the three-colour LED 123, which is visibly mounted on the receiving unit 102, reflects the drive state. As the drive signals are effectively passed transparently to the motor drive relays RL1 and RL2, the LED status can be used to indicate the direction of the motor, ie RED (Sig A Ø, Sig B 1) may be allocated to forward motor drive, and Green (Sig A 1, Sig B Ø) may be allocated to reverse motor drive. Note the LED will only be illuminated while the button is being pressed regardless of the latching mode.

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In both momentary and latching modes, the drive signals from the infrared receiver 120 are always initially latched.

In the momentary mode, releasing the button on the transmitter 101 that initiated the action un-latches the drive signals, giving the effect of a virtual momentary operation.

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In the latched mode, if the button on the transmitter is maintained pressed for more than a preset delay, typically 1-2 secs, than the drive signals will be latched permanently even when the initiating button is released, until such time as another button on the transmitter (either button for this channel) is pressed. If the button is released before the preset delay, then the latch still maintains the momentary mode properties.

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The circuit of the receiving unit is designed to force a latch reset after the second button is pressed in latched mode, ensuring that the circuit will not only reset the system to its quiescent state, but also to ensure that the drive signal from the new button depression will be actioned correctly. That is, if the motor has been latched into forward motion, pressing the "reverse" button will not only reset the forward motor drive signal, but begin to process the "reverse" motor instructions simultaneously.

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The drive signals are connected to a signal sensing circuit 124 comprising two diodes D and D4 which are linked by a series resistor R5. These components form an OR GATE logic combination and hence will provide a logic 1 if either of the drive pair signals are active. This effectively senses any of the buttons being pressed on the transmitter 101.

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The signal from the signal sensing circuit 124 is used to provide a Master RESET to the drive signal latches in latch circuit 121. The signal is inverted by the transistor inverter combination TR6a, R6 and R15 which then forms the reset signal for the drive latches at the pins 11 and 15 of the IC latch circuit 121.

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Whenever no signal is detected by the sensing circuit 124 the transistor TR6a is switched OFF, providing a logic 1 at pins 11 and 15 of IC circuit 121 which sets the drive latch RESET line of the NOR latches to logic 1. The SET lines of the drive latches are obviously at logic Ø as the transistor inverter can only be high if no drive signals are present, and it is these same signals that feed the SET inputs. Thus the two drive latches are both RESET to output logic Ø when no signal is present.

With switch 118 open circuit, the momentary mode of operation is selected.

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Closing switch 118 will engage a Master RESET INHIBIT signal generated by a third latch in latch circuit 121. This latch is responsible for the latched mode timing and is always active, ie the system provides the latched mode timing signal which normally prevents the momentary mode master reset signal generated at the end of a button depression from taking effect. Switch 118 allows the latched mode inhibit signal to be disconnected when Momentary mode is required. Switching the latched mode reset inhibit signal in allows the system to operate in latched mode.

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When a transmitter button is first pressed, this generates a DC logic level 1 (+5V) at R5 (signal sensing circuit 124). This signal is used to provide the master reset mechanism for the two drive signal latches at circuit 121 in momentary mode. Closing switch 118 enables the latched mode of operation, by inhibiting the normal master reset signal in momentary mode.

Similarly the signal produced by the signal sensing circuit 124 is also used to provide the trigger for the latched mode timing circuit.

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The signal at R5 is used to drive a further transistor inverter TR2 and R7. similarly to the momentary master reset signal, this inverter provides a logic 1 when no button is being pressed (no input signal of any type). This signal is used to provide two further signals, the SET and RESET signals to the third latch in circuit 121 (the latch which generates the master reset inhibit signal) input to IC pins 6 and 7 respectively.

The SET signal is generated from a simple switched RC timing circuit 125 consisting of TR3, R8 and C8.

When no signal is present from the infrared detector 120, collector TR2 (inverter) is at logic 1. As this signal is connected to the base of the RC timing transistor TR3 this signal switches TR3 hard ON and effectively hold the junction of the R8 and C8 to 0 volts. Hence the SET input to the pin 6 of IC latch circuit 121 is normally 0.

The reset signal is generated from a discrete logic change detector circuit 126 consisting of TR9, C9, R9, R10, and D6.

Similarly to the SET mechanism, TR9 is normally held hard ON by the transistor TR2. This maintains 0 volts at the junction of R10, D6 and C9, which in turn provides a CMOS logic 0 state at the cathode of D6 and hence holds the RESET input to the latch at pin 7 of the IC latch circuit 121 to the logic 0 state.

When a signal is generated from the infrared receiver 120, TR2 turns hard ON thus switching OFF the RC timing transistor TR3 and the RESET pulse generator transistor TR9.

This has two effects, the capacitor C8 starts to charge through resistor R8, the value of R8 and C8 being chosen to make this time period sufficiently long to provide a CMOS logic 1 potential at the latch SET input pin 6 of circuit 121 after 1-2 secs typically. In this way the master reset inhibit pulse from this latch at pin 9 of circuit 121 will not be generated until this delay has passed. Thus if switch 118 were closed, the system would appear to be in momentary mode until this 1-2 sec delay had passed.

At the same time as the SET timing circuit 125 was triggered, the RESET pulse circuit 126 was also triggered. Switching TR9 OFF enables capacitor C9 to charge up via resistor R9, but capacitor C9 tries to discharge through R10 to 0V. The choice of resistor values R9 and R10 = 10xR9 means that the capacitor charges faster than it can discharge to ground, thus causing a temporary rise in potential at the junction of C9 and R10 which is interpreted as a positive going pulse at the cathode of diode D6, and hence a positive logic pulse at the RESET latch input pin 7 of circuit 121.

Initially the RESET pulse has no effect on the latch as the SET input is held low for far longer than the reset pulse duration. As a result, if the receiver acknowledges the presence of an input signal (from a pressed transmitter button) for longer than the SET timer, the SET input to the latch will be accepted as a logic level 1 input and the latch will SET. This will reflect on the output of the latch, pin 9 of circuit 121, as a latched logic 1. Pin 9 of circuit 121 is the master reset inhibit signal and, if switching 118 is closed, it will prevent the pair of drive latches from resetting. Thus the motor drive will be latched in the specific direction given by the logic of the latched drive signals.

The system is thus in a latched state, if the signal is removed from the infrared detector 120 (is the button is released) this will have no effect on the drive outputs.

Depression of a further button (either button of this channel) will again trigger the RESET pulse circuit 126 which will then generate a reset pulse to the latch at pin 7 of circuit 121. At this stage the latch will be RESET as the latch output is currently high. Thus the master reset inhibit signal is reset allowing the normal momentary mode reset to operate and reset, or further latch, the drive latches when the button is finally released.

To ensure that the two drive latches are always in a state to enable correct reset, the RESET pulse is also applied to the base of a transistor TR6. This transistor in turn is connected between the drive latch reset pins IC3 pins 11 and 15 and the 5V rail. The RESET pulse from the latching delay circuit drives TR6 into the ON state. This in turn pulls the drive latch reset pins high temporarily (for the duration of the pulse) and ensures that the latches receive a reset signal after each transmitter button operation.

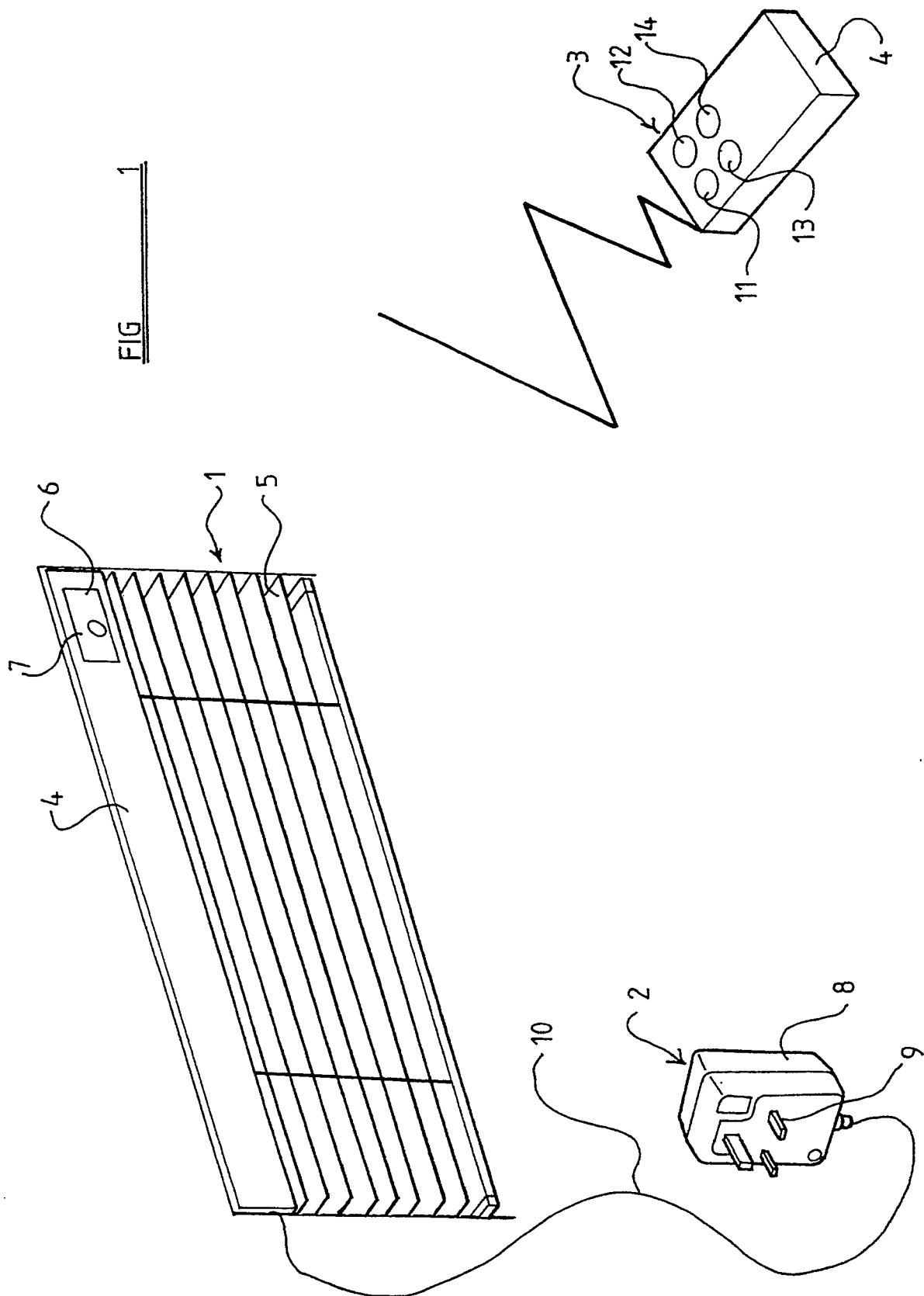
Claims

1. A remote control system for a window blind or the like having a headrail and a movable screening element supported for movement between two end positions, 1 which system comprises electric motor means carried by the headrail and coupled to the movable element for effecting movement thereof when the motor means is energised, a signal receiver carried by the headrail and connected to the motor means for energising the motor means upon reception of a predetermined actuating signal, and a hand-held transmitter for transmitting the actuating signal to the receiver from a remote location.
2. A remote control system according to claim 1, wherein the movable element is tiltably supported and the electric motor means is energised only for the period during which the signal receiver receives the predetermined actuating signal, so that the angle of tilt of the movable element can be selected by ceasing transmission of the actuating signal upon the desired angle of tilt being reached.
3. A remote control system according to claim 1, wherein the movable element is supported for translational movement relative to the headrail and the receiver maintains the electric motor means energised until the movable element reaches one of its end positions.

4. A remote control system according to claim 1, wherein the movable element is supported for tilting movement and for translational movement relative to the headrail, the receiver responding to a transmitted actuating signal during a predetermined initial period to energise the motor means for tilting of the slats and thereafter responding to a received actuating signal to energise the motor means for translating the movable element.
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5. A remote control system according to any preceding claim, wherein the blind is a venetian blind comprising a plurality of movable screening elements in the form of slats which can be tilted and raised and lowered.
- 10 6. A remote control system according to any preceding claim, wherein the transmitter of the system is adapted to transmit a selected one of a plurality of different actuating signals to enable a plurality of adjacent blinds to be actuated independently.
- 15 7. A remote control system according to any preceding claim, wherein the signal receiver includes a receiving eye unit for location in spaced relation to an obscured headrail so as to be in a position to receive the actuating signal.
- 20 8. A remote control system for a window blind or the like having a headrail and a movable screening element supported for tilting movement and for translational movement relative to the headrail, which system comprises electric motor means coupled to the movable element for effecting movement thereof when the motor means is energised, a signal receiver connected to the motor means for energising the motor means upon reception of a predetermined actuating signal, and a hand-held transmitter for transmitting the actuating signal to the receiver from a remote location, the receiver responding to a transmitted actuating signal during a predetermined initial period to energise the motor means for tilting of the slats and thereafter responding to the actuating signal to energise the motor means for translating the movable element.
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- 30 9. A remote control system for a window blind or the like having a headrail and a movable screening element supported for movement between two end positions, which system comprises electric motor means coupled to the movable element for effecting movement thereof when the motor means is energised, a signal receiver connected to the motor means for energising the motor means upon reception of a predetermined actuating signal, and a hand-held transmitter for transmitting the actuating signal to the receiver from a remote location, the transmitter having control means for initiating transmission of one of a plurality of actuating signals on a corresponding signalling channel and selecting means for selecting the actuating signal for transmission by the control means, and the signal receiver having setting means for setting the receiver to respond to a selected one of the actuating signals transmitted on the signalling channel, thereby enabling operation of a plurality of different blinds by the same control means of the same transmitter.
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- 40 10. A remote control system according to claim 9, wherein the transmitter comprises a plurality of control means each for transmitting a selected one of a plurality of actuating signals on a respective transmission channel, and the setting means of the signal receiver comprises means for setting the receiver to respond to a selected actuating signal on a selected signalling channel.
- 45 11. A remote control system according to any preceding claim, wherein the transmitted actuating signal is an infrared signal.

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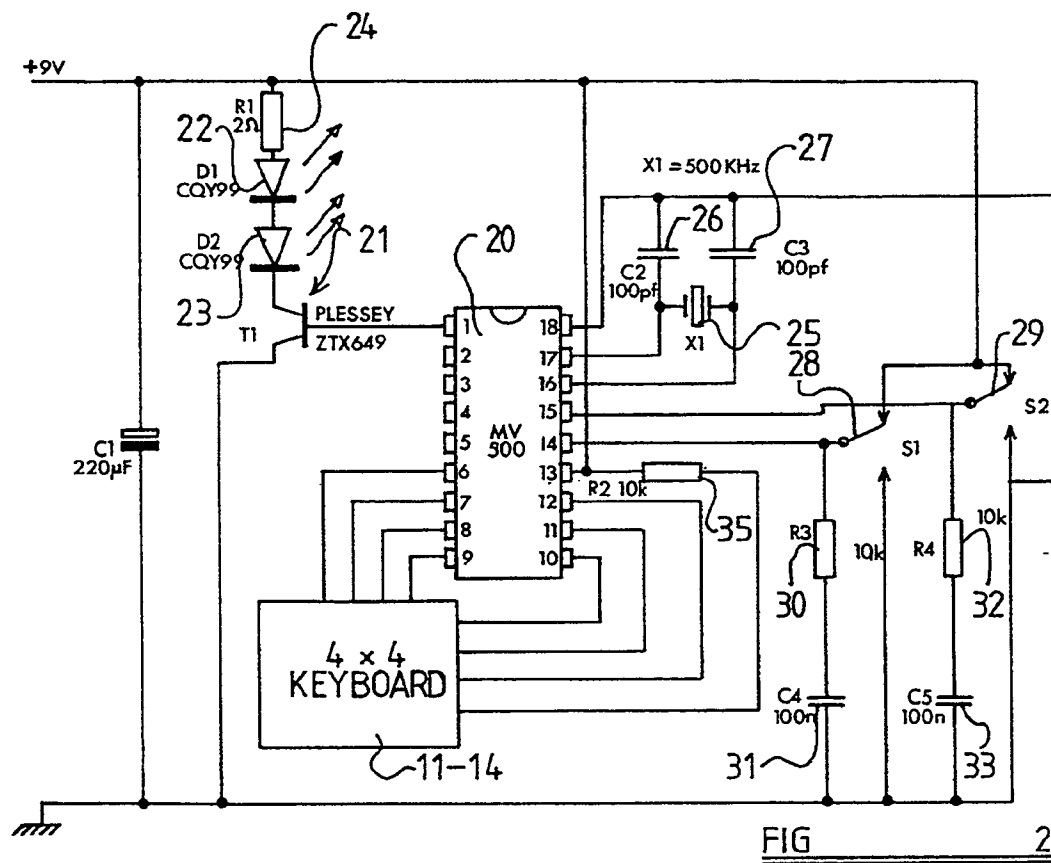


FIG 2

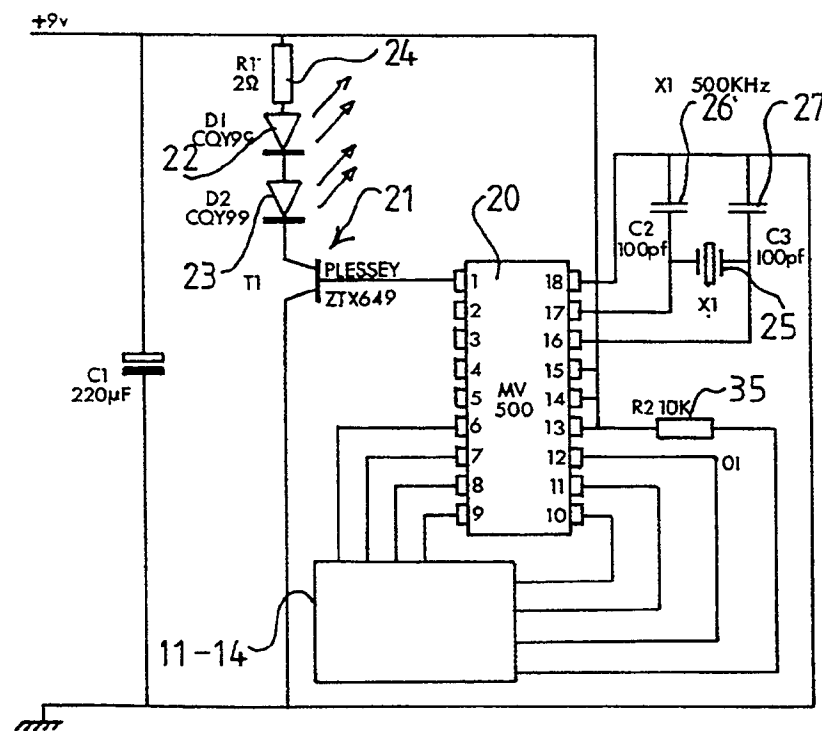


FIG 4

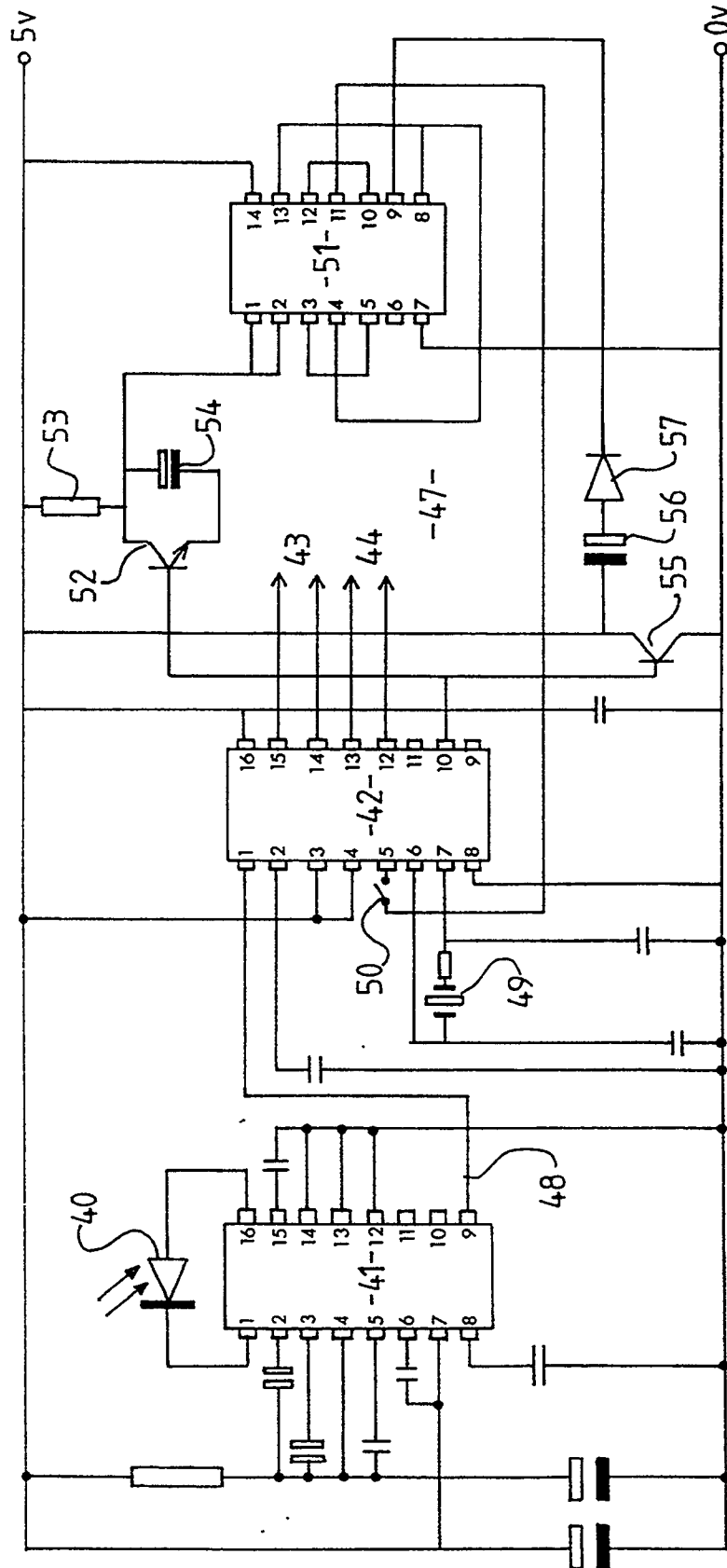
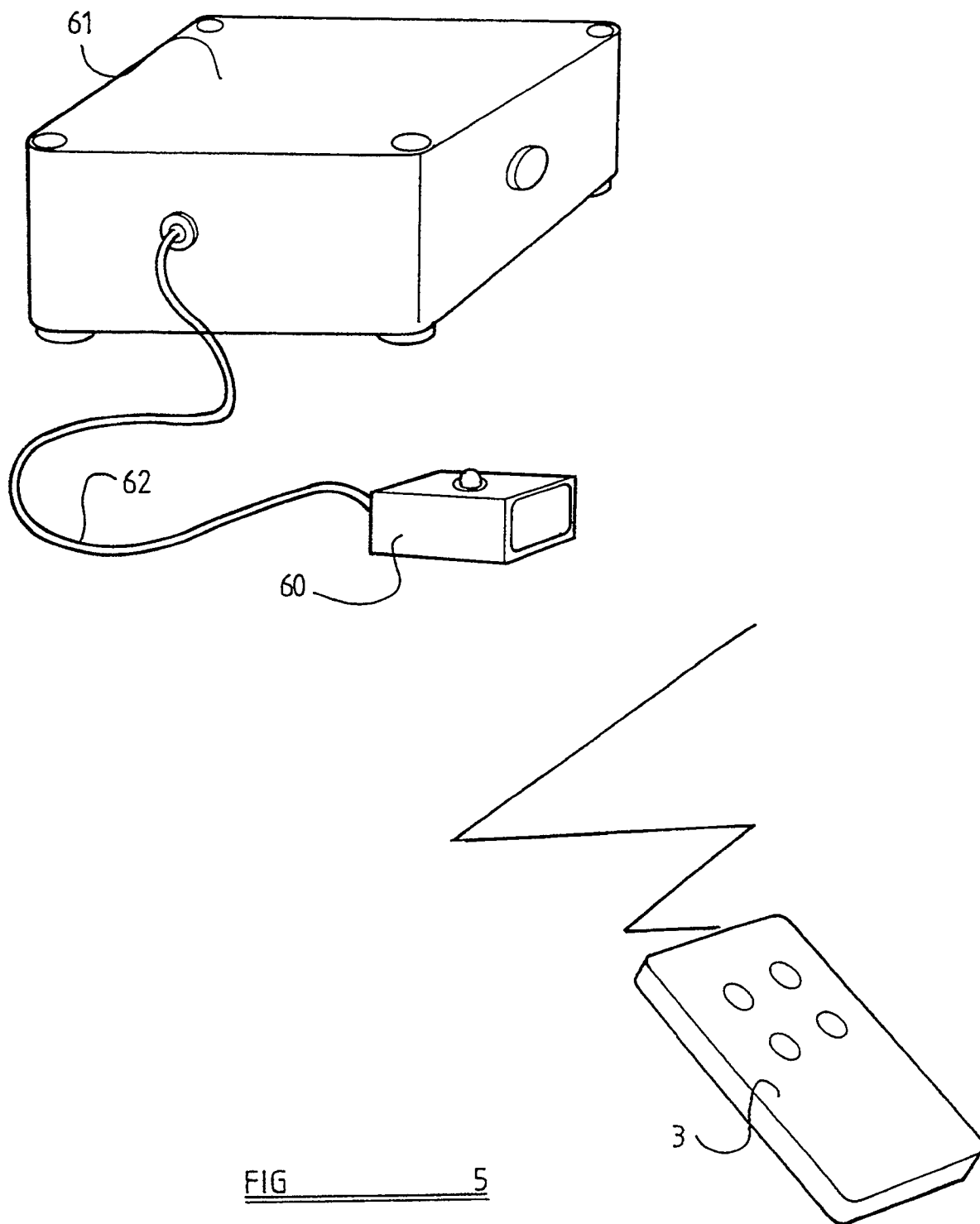


FIG 3



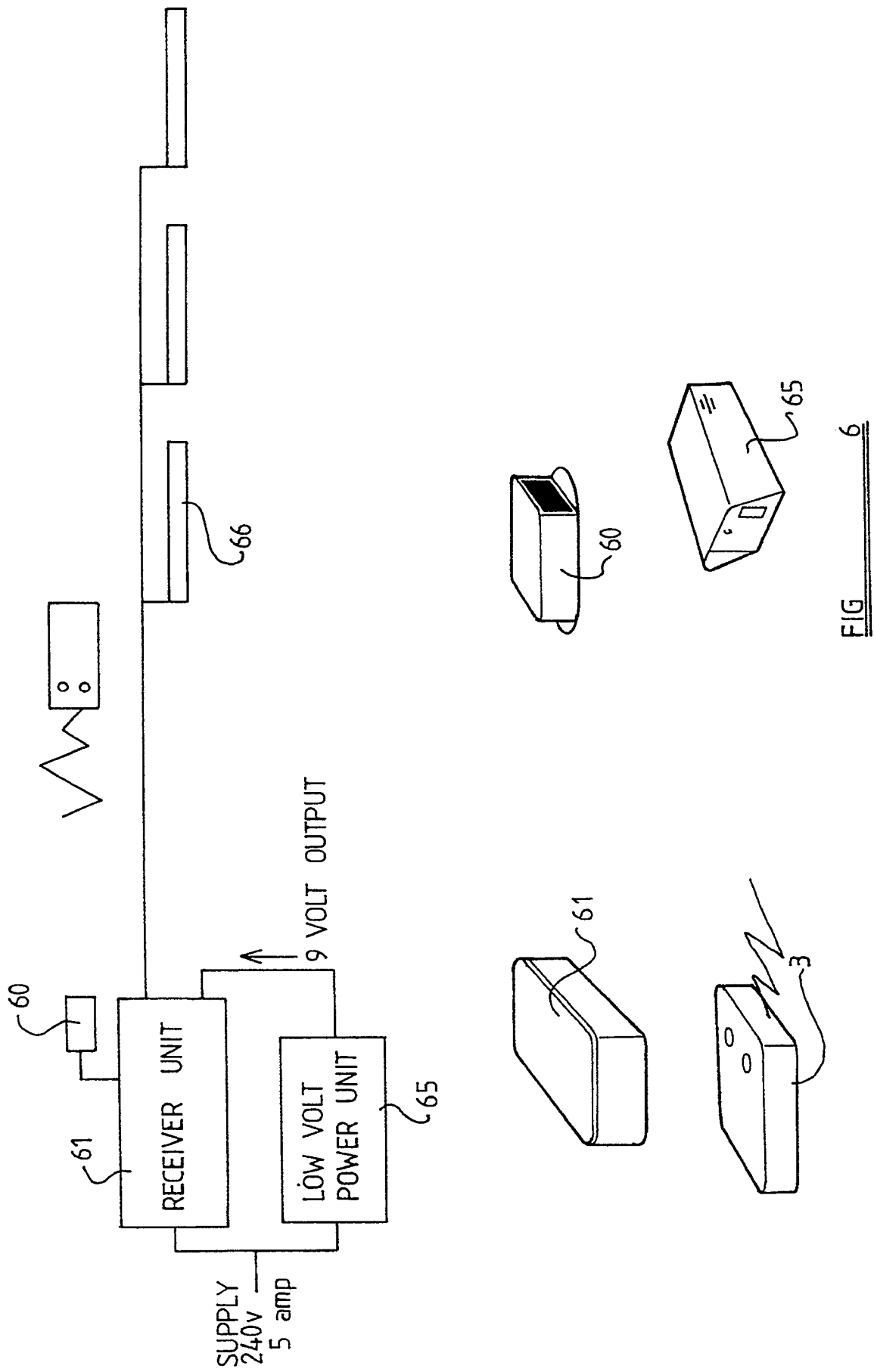


FIG 6

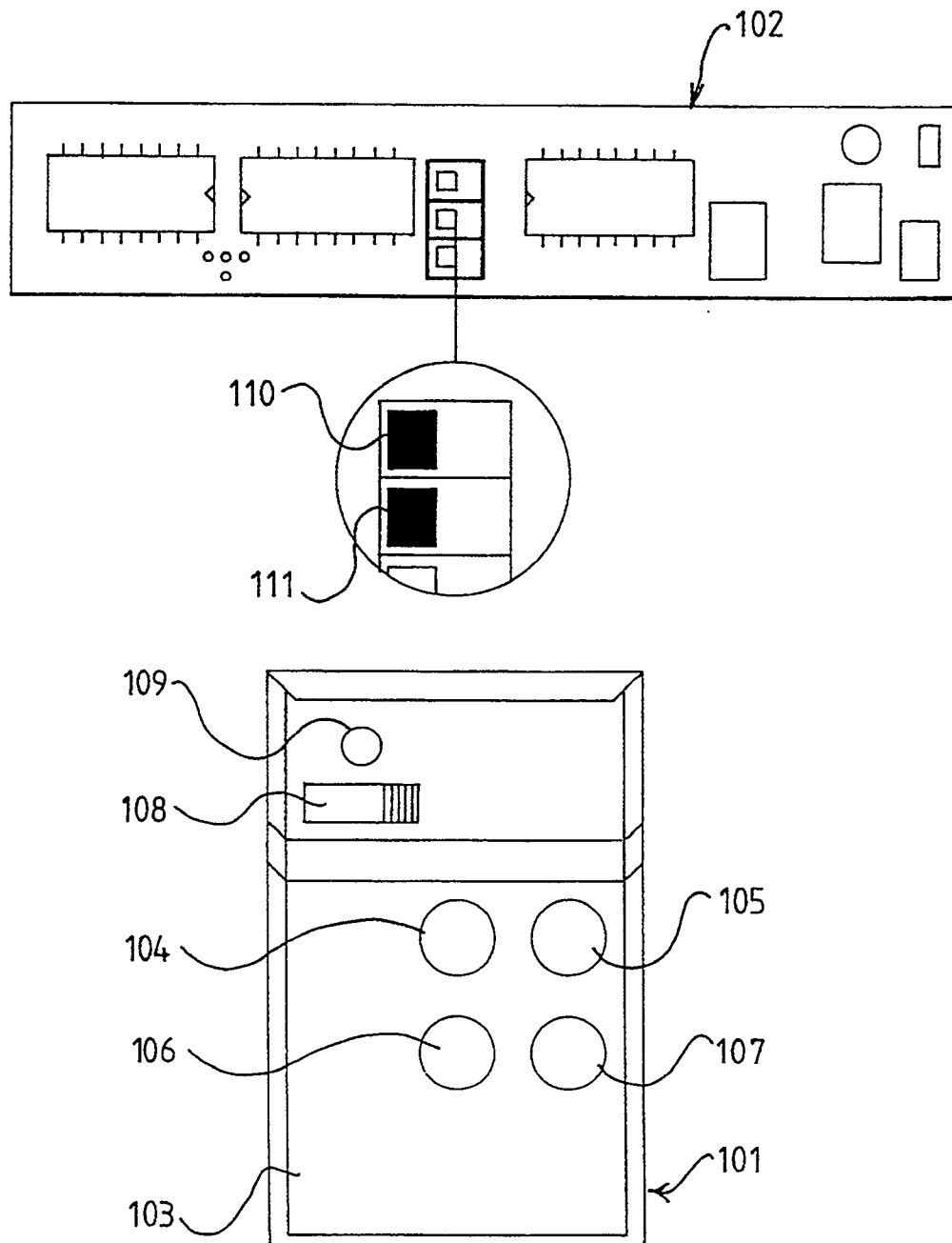
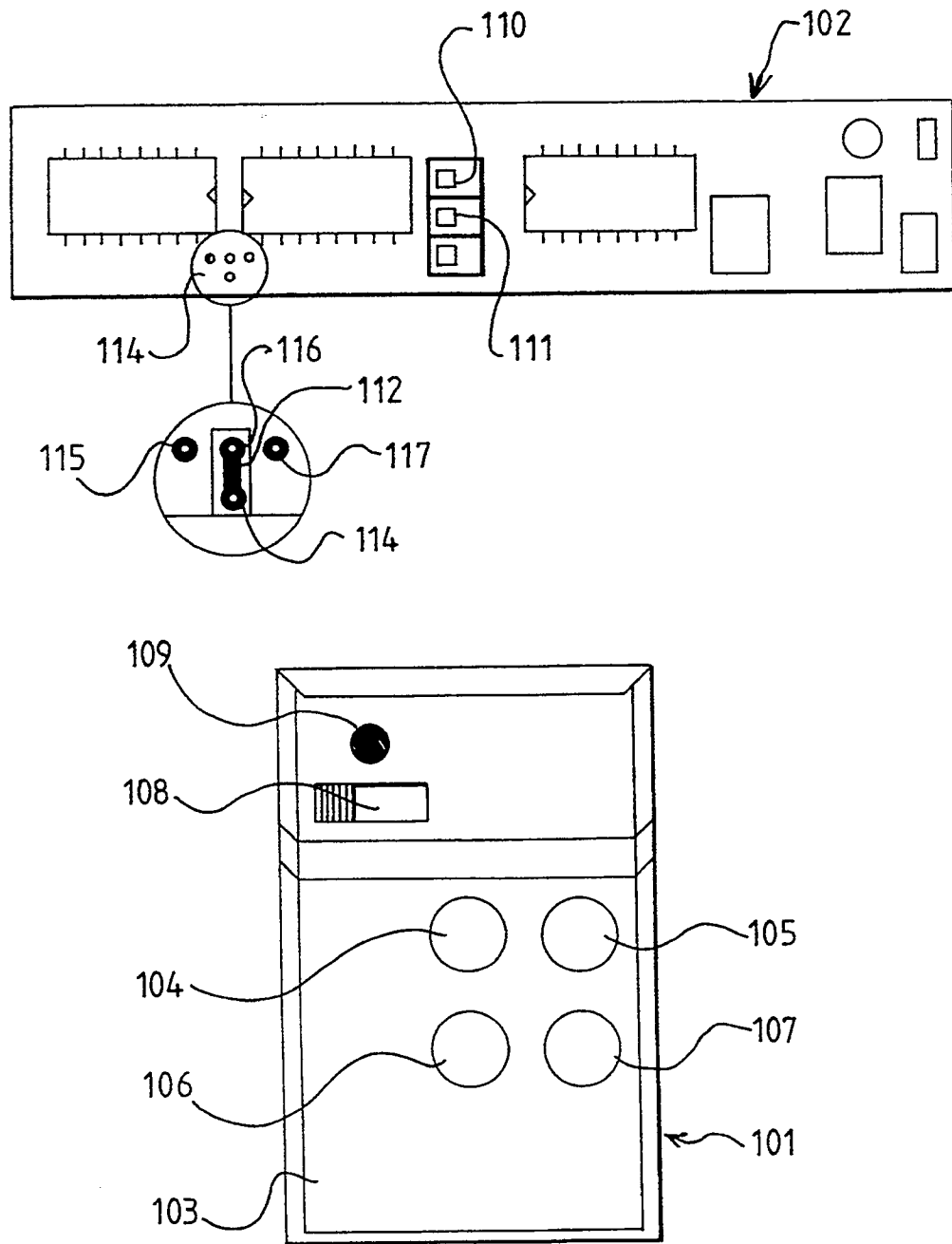


FIG 7



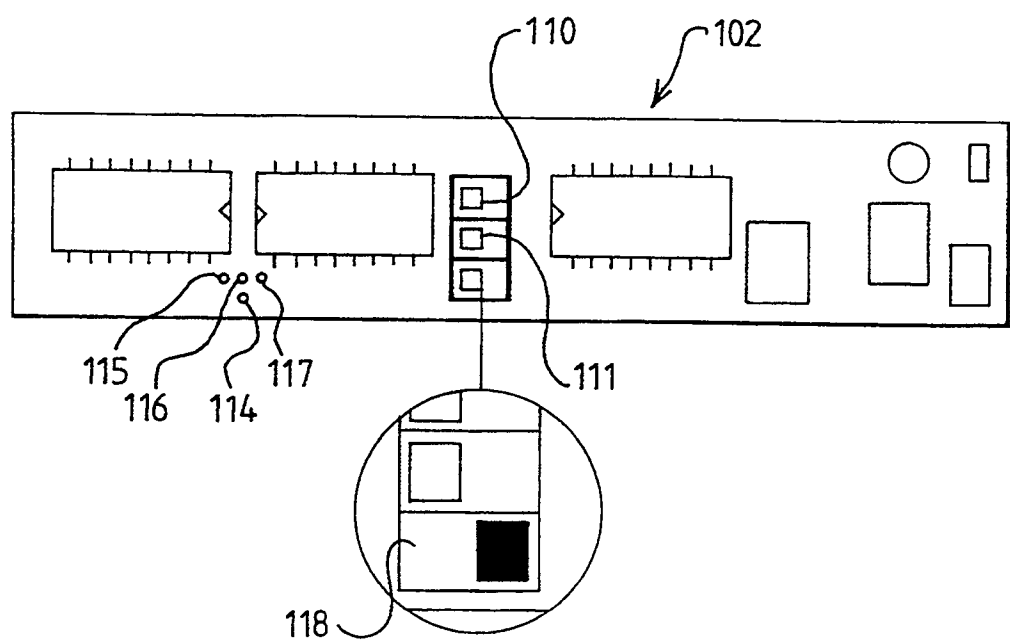


FIG 9

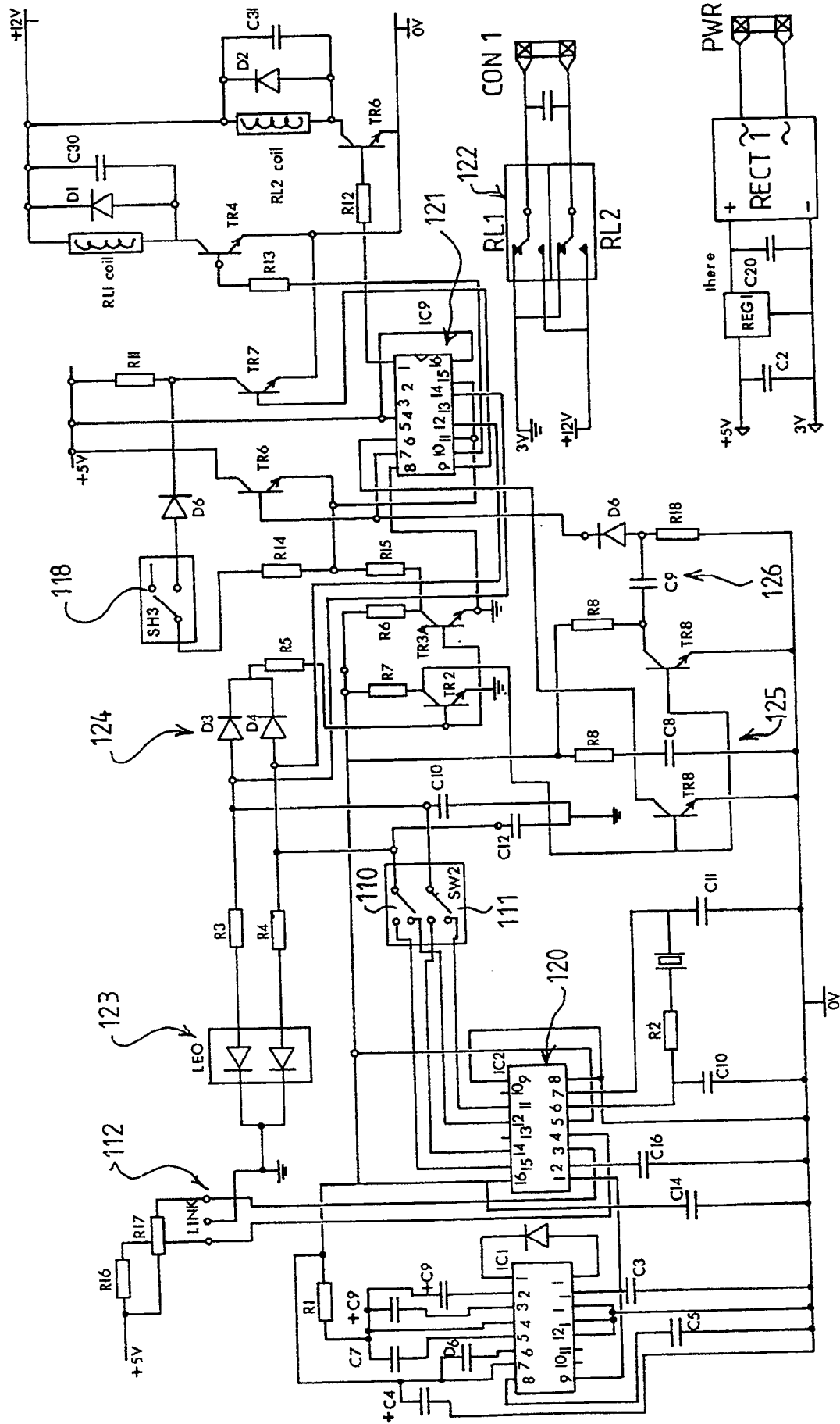


FIG 10