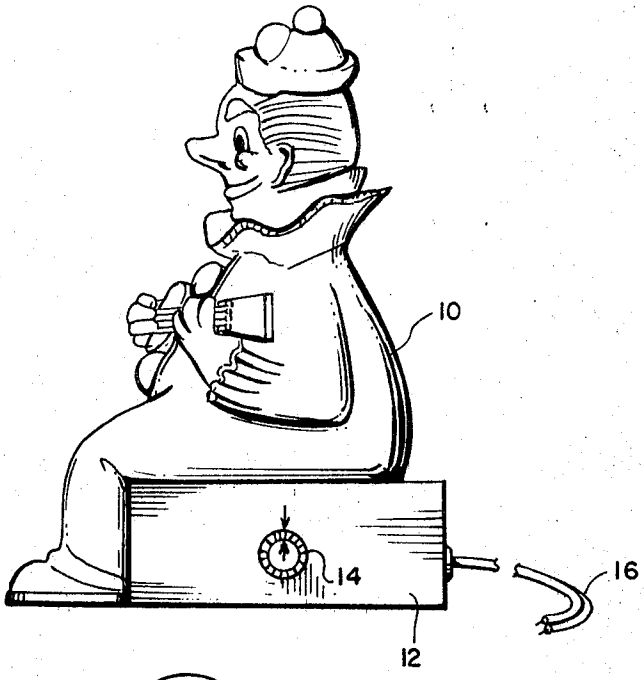
Aug. 25, 1970 G. S. CARTER ET AL 3,525,862

CHILD'S NIGHTLIGHT AND MUSIC BOX

Filed Aug. 10, 1967 2 Sheets-Sheet 1

FIG. 1



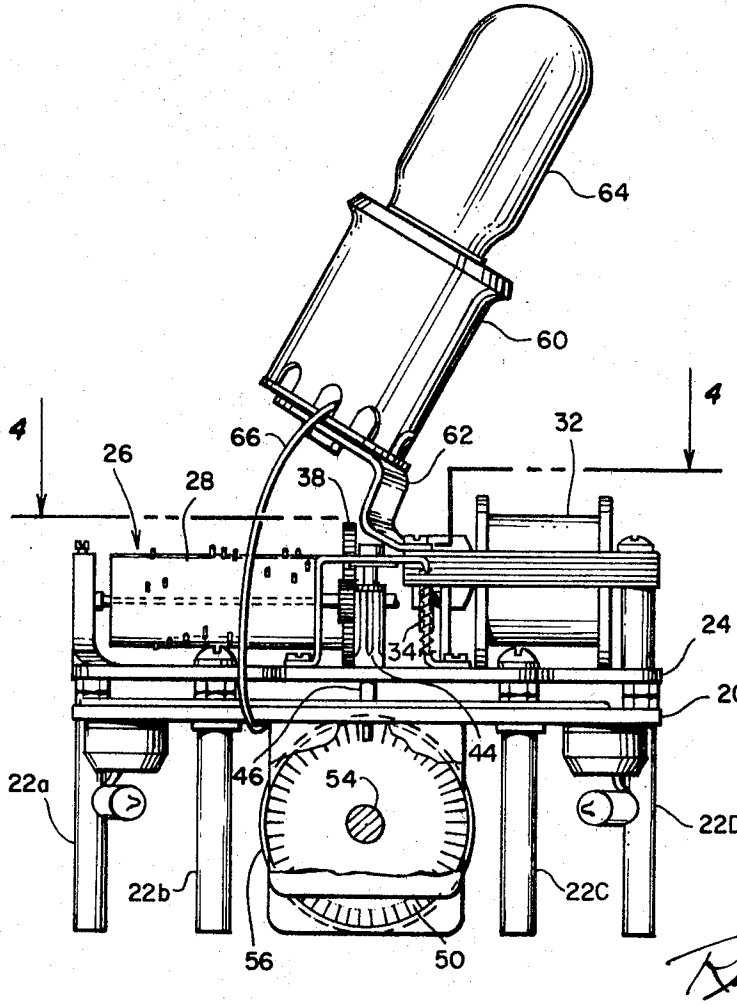


FIG. 2

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CHILD'S NIGHTLIGHT AND MUSIC BOX

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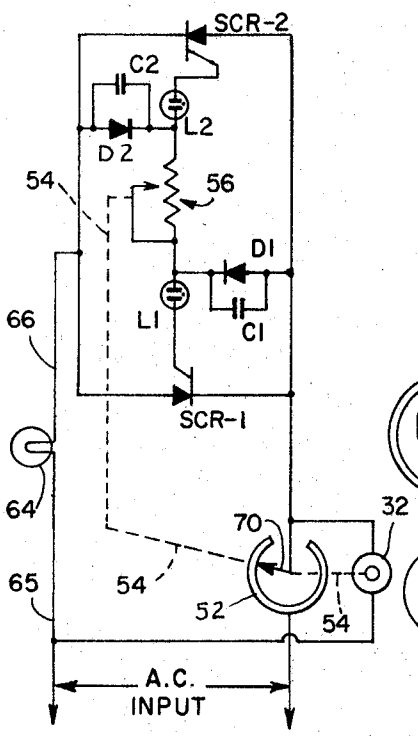


FIG. 5

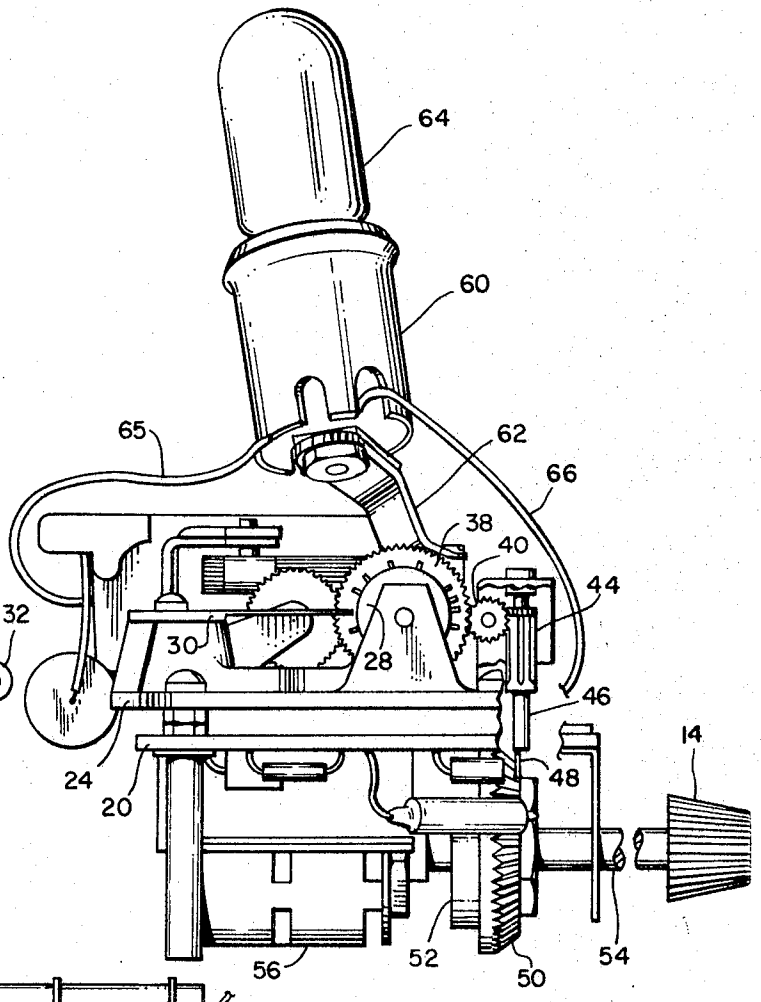


FIG. 3

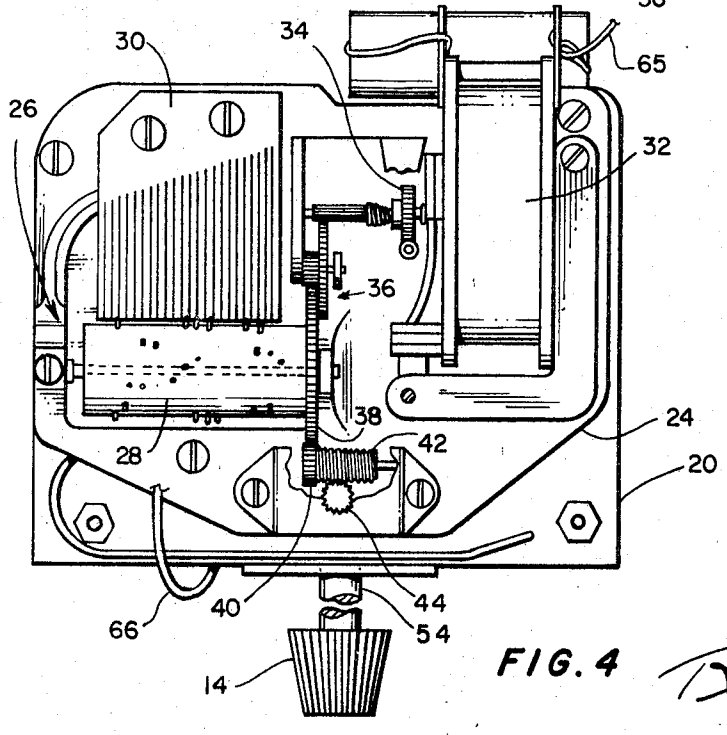


FIG. 4

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United States Patent Office 3,525,862
Patented Aug. 25, 1970

3,525,862

CHILD'S NIGHTLIGHT AND MUSIC BOX

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Filed Aug. 10, 1967, Ser. No. 659,788
Int. Cl. F21v 33/00; H05b 39/04
U.S. Cl. 240—2 3 Claims

ABSTRACT OF THE DISCLOSURE

A child's nightlight and music box combination includes an electric motor for operating the music box and provides a timer for a rheostat which gradually dims the light to complete shutoff and then shortly thereafter to stop the motor and the music. The system in one form includes a solid state circuit for keeping the motor at full r.p.m. or gradually reducing the current to the lamp.

A child's nightlight and music box combination of the invention provides a means for soothing a child when placed in bed by the use of a music box and by means of a type of rheostat to effect a gradual reduction in the intensity of a small nightlight. The gradual dimming of the nightlight tends to make the child sleepy and in conjunction with the soothing effects of the music box quiets the child and aids in placing the child in condition for falling asleep. The system is arranged to gradually dim the light, then extinguish it while the music still plays for a short period of time, and then the music box is subsequently shut off after the light is extinguished. In one form of the invention the dimming takes over a period of about 15 minutes and the music box is permitted to operate for several minutes after the light is fully extinguished.

In a form of the invention, the mechanism, including the electrical lamp, is placed inside of a hollow, transulent figure, such as a clown made of plastic, cartoon character, an animal etc. A small lamp, in the order of 7–15 watts, is usually sufficient to light the figure, particularly in a darkened room such as is required for a sleeping child. The music box may be of the Swiss-type with a pin drum impinging on tuned tines, however, other types of music boxes, of course, may be used. For example, a rotary disc music box using punched-out-teeth striking tune tines may be used. The musical pieces played by the music boxes are preferably slow and restful for producing the desired effect, and such music as Brahms Lullaby, etc. is highly satisfactory in producing the effect desired. For convenience the invention uses household current, however, the invention contemplates the use of a spring wound motor for running the music box and a dry cell or other battery for operating the lamp, also, a fully operated battery device is contemplated.

Included among the objects and advantages of the invention is to provide a child's nightlight and music box arranged to play music for pre-determined periods while gradually dimming the nightlight, and then extinguishing the light prior to cessation of the music.

Another object of the invention is to provide a music and light system intended to aid putting a child to sleep.

A further object to the invention is to provide means for timing a music cycle and a light dimming cycle.

These and other objects and advantages of the invention may be readily ascertained by referring to the following description and appended illustrations in which:

FIG. 1 is a side elevational view of one form of a device according to the invention, illustrating a hollow, transulent figurine housing the mechanism of the invention;

FIG. 2 is a side elevational view of a drive mechanism for a child's nightlight and music box according to the invention;

FIG. 3 is a front elevational view of the mechanism of FIG. 2, partially cut away;

FIG. 4 is a top plan view of the mechanism illustrating the gearing arrangement between the motor, the music box and a rheostat; and

FIG. 5 is a schematic circuit diagram of one form of the invention.

In the device illustrated for illustration in the accompanying drawings, FIG. 1 illustrates a completed night lamp and music box arranged according to the invention, wherein a hollow, transulent body **10**, in the form of a clown, is mounted on a base **12** which contains the workings of the music box and lamp. A tuner knob **14** provides means for setting the mechanism as explained below, and input power lines **16** provide current to the mechanism. The power line **16** is preferably a two-conductor line arranged for use with normal household current. The figurine **10** may be a blow molded plastic figure with various portions painted to represent clothing, makeup, and the like. Obviously, other types of figures can be used, such as types of figures which appear to younger children.

The mechanism which fits inside the base and into the figure includes a frame member **20**, which is also a circuit board, having a plurality of legs **22***a*, **22***b*, **22***c* and **22***d* which are internally threaded for mounting a base cover plate by means of screws, as is conventional in electrical equipment. A music box sounding board frame **24** is secured to the base plate **20** on the side opposite the legs, and a pin platen music box **26** is mounted thereon. The music box may be a conventional pin platen music box which includes a pin platen **28** and a tined sounding board **30** arranged with the ends of the tines adjacent to pin platen, the pins flick the tines the platen rotates forming the tune. A microfractional horse power **32** is mounted on the sounding board, and a gear **34** attached to the motor shaft rotates a gear train **36** which rotates a gear **38** mounted on the pin platen for operating the music box. The gear train is arranged to reduce the shaft speed of the motor so as to rotate the platen at the required speed for producing the music determined by the set of the pins on the platen. A gear **40** is meshed with the gear **38** rotating a worm **42**, which inturn rotates a worm wheel **44** mounted on a shaft **46**. A single prong wire drive **48** eccentrically mounted on shaft **46** meshes with single tooth on a large bevel gear **50** is mounted underneath the frame member **20**. The single prong wire drive is in position to contact a tooth in gear **50** once every revolution of shaft **46** rotating gear **50** one tooth width every revolution of shaft **46**. The gear **50** is attached to a rotary switch (or potentiometer) **52** so as to be turned thereby, and a common shaft **54** on which is mounted the gear **50** and the switch **52** is connected with and operates a variable resistor **56**. A lamp base **60** mounted on a bracket **62** threadedly supports a low wattage lamp **64**. Leads **65** and **66** provide electricity to the lamp through the base **60**. The general arrangement from the motor to the variable resistor is such that with the motor running at full r.p.m. the resistor is increased from minimum resistance to full resistance over a period of about 15 minutes. During this time the lamp **64** is reduced from full intensity to complete shut off. The switch **52** is arranged so that the resistance is sufficient to cut off the lamp but maintains full current to the motor for operating the music box a few minutes after the light has been extinguished. When the movable conductor **70** on the switch **52** is moved past the arcuate static conductor of the switch the circuit to the motor is broken and it is shut off.

The circuitry for the system is illustrated in FIG. 5 providing a solid state potentiometer for the gradual reduction of current to the lamp, or load, **64** on a pre-

determined timed basis for reducing the intensity of the illumination of the light to complete shut off and then subsequently shutting off the motor which runs the music box. The motor is directly connected across the AC input lines so that it receives full current to operate at full r.p.m. during any time a current is in the circuit. In this manner the msuic box is run at a constant speed to produce the music at a desired beat and time. The current to the lamp **64**, however, is reduced by the use of inverse parallel SCR's (silicon-controlled rectifier) which are controlled by neon oscillator lamps **L1** and **L2** which provide the gate firing voltage to the SCR's. Each circuit acts as a controlled half wave rectifier. It will block both the positive and negative half cycle until a positive control signal is impressed on the gate. One circuit will block the positive and conduct the negative while the other blocks the negative while conducting the positive providing a full wave on the lamp. Diodes **D1** and **D2** are biased in opposite directions in the inverse parallel circuits for providing one half wave current to the oscillators which provide the firing of the SCR's. By properly timing the applied control signals to the SCR's from the oscillator lamps **L1** and **L2**, the SCR's may be made to conduct all or part of the positive half cycle for each circuit thereby giving all or a portion of a full wave alternating current to the lamp. As the resistance of the variable resistor **56** changes the minimum gate firing voltage from the oscillators to the SCR's will vary and thus the firing of the SCR's will change in accordance with the resistance of the variable resistor **56**. Since the conductor of the variable resistor **56** is moved across the stator or windings of the resistor by means of the step-wise movement due to periodic contact by drive **48** on the shaft **54** with the gear **50**, the current to the lamp **64** is step-wise reduced so that there is a step-wise reduction in the intensity of the lamp **64**. The voltage is reduced to the point where the SCR's will not fire and no current is induced on the filament of the lamp **64**. Further movement of the conductor **70** along the switch moves it to the end of the switch where contact is broken and the circuit to the motor **32** is broken whereupon the motor ceases operation. The operation can be repeated by turning the knob **14** in a reverse direction to move the conductor **70** to any position on the arcuate static conductor of switch **52** where current is again induced on the motor **32**. Due, to the configuration of the unit, the switch **52** may be set at any position to provide any time desired for the operation of the music box and the lamp. Where desired, of course, the knob may be turned to move the pointer conductor **70** off the arcuate windings and stop the operation of the unit.

The capacitors **C1** and **C2** mounted are directly across diodes **D1** and **D2** respectively from the anode to the catthode to provide a timing capacitor for the firing of the SCR's.

The solid state circuitry illustrated above provides a small, compact, inexpensive unit for use with a 15 watt lamp. It is, of course, obvious that a rheostat with a mechanically turned armature might be used, however, a much larger motor would be necessary to turn the rheostat. In the circuit shown, a half watt potentiometer is used for changing the current to the lamp, whereas, with a 15 watt rheostat a larger motor would have to be used in a mechanically operated rheostat. However, with either unit the object of the invention is readily achieved which is to gradually and progressively reduce the intensity of the nightlight while continuing to play music,

extinguishing the light after a pre-determined period, and then at a pre-determined time to stop the music.

While the invention has been illustrated by reference to particular embodiments there is no intent to limit the spirit and scope of the invention with precise details so set forth except as defined in the following claims.

We claim:

1. A nightlight and music box comprising:

(a) a small wattage electric lamp,

(b) a music box,

(c) electric motor having a single drive means for operating said music box,

(d) an alternating current input means for providing current to said lamp,

(e) means for progressively reducing said current to said lamp over a predetermined time period from maximum current to the point where said lamp is extinguished, said progressively reducing means including:

(1) a pair of inverted parallel SCR circuits, each having an SCR therein,

(2) means for providing variable firing voltages for said rectifier circuits including a single variable resistor in series with the gates of said SCR's and a pair of neon oscillators, said variable resistor having an operating means also connected to said single drive means,

(3) said SCR circuits connected in series with said lamp and alternating current input means, and

(f) switch means having a movable conductor connected to said single drive means engaging a stationary conductor conducting current to the input to said motor for permitting operation of said music box for a predetermined time after extinguishing said lamp.

2. A nightlight and music box according to claim **1** wherein single prong wire drive is connected to said drive means, a gear mounted for contact with said single prong wire drive providing step-wise turning of said gear, said gear being connected with said switch means and said variable resistor for step-wise turning of said switch means and said variable resistor.

3. A nightlight and music box according to claim **2** wherein said single wire prong drive is an off-set wire in shaft periodically contacting the teeth of said gear and partially moving the same for each revolution of said shaft.

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U.S. Cl. X.R.

84—95; 315—100