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"Device for imparting movement to a baby cradle"

This invention relates to a device for imparting movement to a baby cradle and to such a device in combination with a cradle.

According to the invention there is provided a device for imparting movement to a baby cradle, comprising a support structure which can be suspended from a ceiling or the like, a vertically orientated elongate member carried by the support structure, means for suspending a cradle from the elongate member, resilient means urging the elongate member in an upwards direction relative to the support structure, a solenoid coil mounted on the support structure so as to surround the elongate member between the ends thereof, and means for periodically supplying an electric current to the solenoid coil to cause the elongate member to move downwards against the urging force of the resilient means, so as in use to impart movement to the cradle.

Preferably, a hanger is connected to the lower end of the elongate member for supporting a cradle, such that the cradle is able to swing relative to the elongate member.

Conveniently, the resilient means comprises one or more tension springs connected at an upper end or ends to the support structure and at a lower end or ends to the upper end of the elongate member.

Preferably, the position of the solenoid coil can be adjusted in a direction parallel to the longitudinal extent of the elongate member in accordance with the weight of a baby in the cradle.

Preferably, the device further comprises means for playing one or more musical tunes.

Preferably, the elongate member is made entirely of ferromagnetic material.

The device may also have a timer for setting the period of operation of the device.

The invention also provides a device as defined above in combination with a cradle, preferably in the form of a ratton basket or any like sarong cloth.

The invention will now be more particularly described, by way of example, with reference to the accompanying drawings, in which:-

Figure 1 is perspective view of one embodiment of a device according to the invention,

Figure 2 is a fragmentary front view of the device shown in Figure 1 with the front panel of the control box removed, and

Figure 3 is a diagram illustrating the electrical circuit of the device shown in Figures 1 and 2.

Referring now to Figures 1 and 2, the device shown therein comprises a support structure 10 having two vertical members 11 and 12 and a cross member 13 connecting the upper ends of the vertical members 11 and 12. A control box 14 is attached between the lower ends of the vertical members 11 and 12 and contains a solenoid coil 15 (see Figure 2).

A hook or other fastener 16 extends upwards from the cross member 13 so that the device can be suspended from a ceiling, beam or the like.

An elongate member in the form of an iron rod 17 extends through the centre of the solenoid coil 15 and is connected at its upper end either to a single tension spring or to twin tension springs 18 arranged side-by-side, the tension springs being suspended from the cross-member 13. The tension spring or springs may be substituted by one or more other springs according to the weight of a baby.

A hanger 21 for supporting a cradle, such as a ratton basket or any like sarong cloth cradle 19, is attached to the lower end of the iron rod 17 such that the hanger 21, and hence the cradle 19, can swing relative to the rod 17.

The vertical members 11 and 12 each comprise two telescopically extendible tubes which are releasably

secured in a desired position by an associated locking screw 20. This enables the lower end of the control box 14 to be aligned with a marker (not shown) on the rod 17 so as to set the position of the control box 14 and hence the position of the solenoid coil 15 relative to the rod 17 according to the weight of a baby in the cradle 19.

The control circuit shown in Figure 3 will now be described briefly. Current is supplied in periodic bursts to the solenoid coil 15 by thyristors 23 and 24 triggered by an I.C. timer 25. Each burst lasts for about 0.5 seconds and it is necessary to supply a burst of current for each cycle of movement of the rod 17. The timer can be adjusted by variable resistors 26 and 27 operated by weight and fine controls 28 and 29, respectively, on the front panel of the control box 14. The timer 25 needs to be adjusted to operate at a specific point in the cycle of movement of the rod 17 and is associated with the natural resonant frequency of the tension spring.

A further I.C. timer 30 and associated relay 31 controls the period of operation of the device and is adjustable by a control knob 32 connected to variable resistor 33 and a switch 34. In one position of the switch 34 the timer 30 can be adjusted to operate the

device for between five and forty-five minutes whilst in the other position of the switch 34 the device will operate non-stop. The timer 30 has a reset button 42.

Power supply to the circuit is by way of an adaptor (not shown) which can be connected to a mains supply. A light emitting diode 35 in a voltage stabiliser circuit 22 indicates when the power is switched on.

A readily available integrated circuit 37 storing 16 continuous lullabies is connected to a speaker 36 and operates when the relay 31 is closed. The integrated circuit 37 has an associated variable resistor 39 which is connected to a control knob 40 for volume adjustment and a separate on/off switch 41.

To operate the device a baby is placed in the sarong cloth cradle 19. The length of the vertical members 11 and 12 is adjusted to align the lower end of the control box 14 with the marker on the iron rod 17. All control knobs are then turned anti-clockwise and the adaptor is plugged into a mains outlet. The timer 30 is then set using switch 34 and control knob 32 to give a desired duration of operation and the musical volume, if required, is adjusted by the control knob 40. The controls 28 and 29 are then adjusted to regulate the frequency at which the thyristors are triggered and hence the speed at which the cradle is caused to rock.

The device described above is given by way of example only and many modifications are envisaged. For example, the vertical members 11 and 12 could each be in the form of a one piece tube and the control box could be mounted for slidable up and down movement on the one piece tubes.

CLAIMS

1. A device for imparting movement to a baby cradle comprising a support structure which can be suspended from a ceiling or the like, a vertically orientated elongate member carried by the support structure, means for suspending a cradle from the elongate member, resilient means urging the elongate member in an upwards direction relative to the support structure, a solenoid coil mounted on the support structure so as to surround the elongate member between the ends thereof, and means for periodically supplying an electric current to the solenoid coil to cause the elongate member to move downwards against the urging force of the resilient means, so as in use to impart movement to the cradle.

2. A device as claimed in claim 1 further comprising a hanger connected with a lower end of the elongate member for supporting a cradle, such that the cradle is able to swing relative to the elongate member.

3. A device as claimed in claim 1 or claim 2 wherein the resilient means comprises one or more tension springs connected at an upper end or ends to the support structure and at a lower end or ends to the upper end of the elongate member.

4. A device as claimed in any one of the preceding claims wherein the position of the solenoid coil is adjustable in a direction parallel to the longitudinal extent of the elongate member.

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5. A device as claimed in any one of the preceding claims wherein the elongate member is formed from ferromagnetic material.

6. A device as claimed in any one of the preceding claims wherein the frequency of supply of electric current to the solenoid coil by the supplying means is adjustable.

7. A device as claimed in any one of the preceding claims further comprising a timer for setting a period of operation of the device.

8. A device as claimed in any one of the preceding claims further comprising means for playing one or more musical tunes.

9. In combination, a device as claimed in any one of the preceding claims and a cradle.

10. A combination as claimed in claim wherein the cradle is in the form of a ratton basket or any like sarong cloth.

11. A device imparting movement to a baby cradle substantially as hereinbefore described with reference to the accompanying drawings.