

United States Patent

Auld

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[54] INFANT WARMER HAVING ELECTRIC (INFRARED) HEATING MEANS

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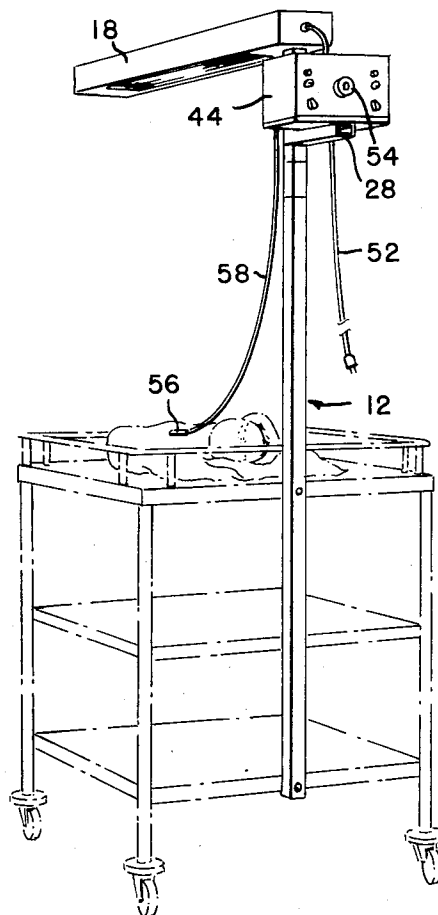
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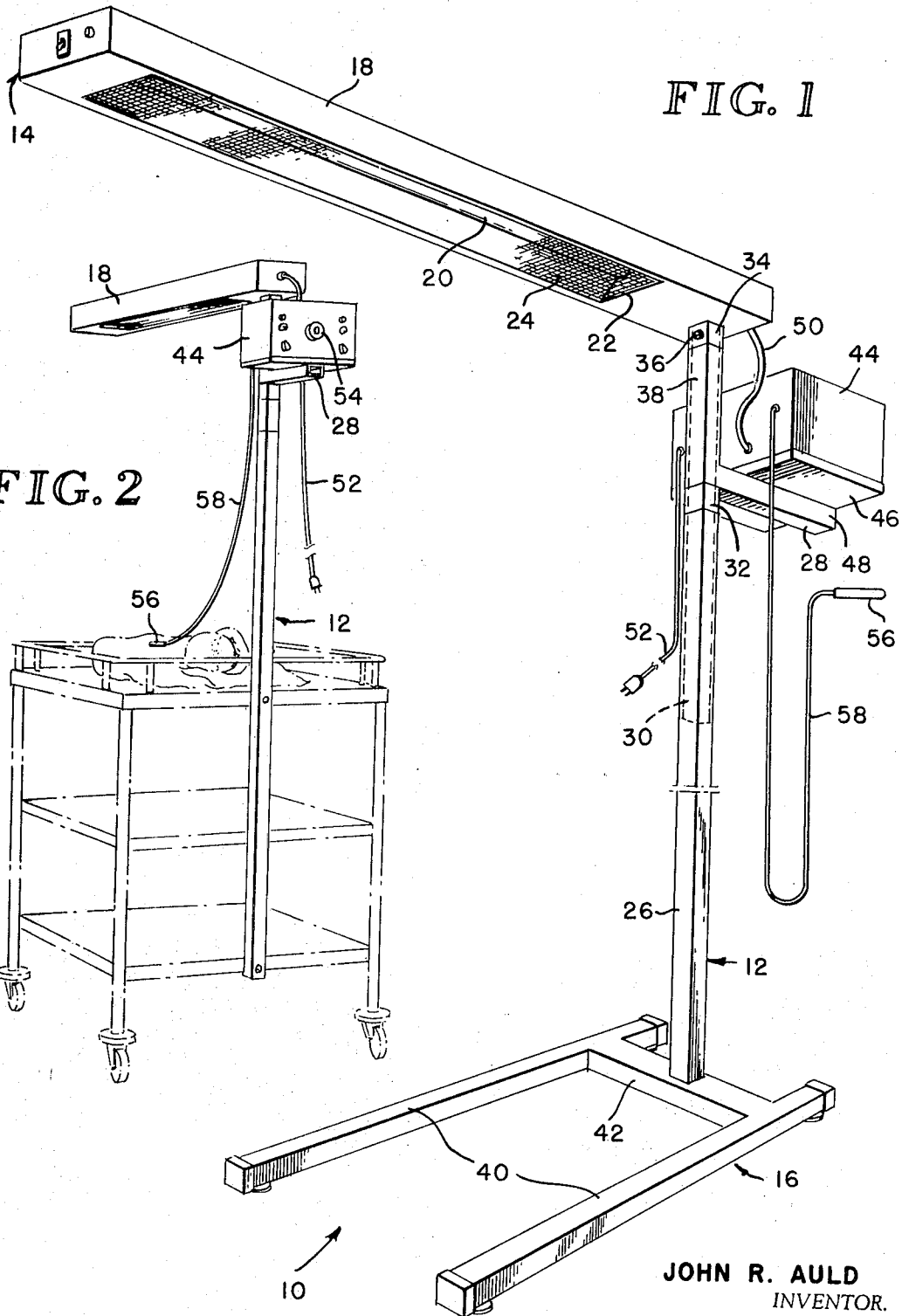
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[57] ABSTRACT

A separate environment limited to the immediate vicinity of an infant is created by the infant warmer which employs infrared radiation controlled in intensity by a unit responsive to the body skin temperature of an infant. The warmer is elongate in design to provide a controlled environment of limited dimensions within a surrounding ambient environment and includes a vertical mounting stand which is adapted to receive insertable block adjusting sections for controlled height adjustment.

1 Claims, 2 Drawing Figures





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INFANT WARMER HAVING ELECTRIC (INFRARED) HEATING MEANS

The present invention relates to electrical warming units generally and more particularly to a novel and improved infant warmer for providing infrared radiation of controlled intensity.

A newborn infant has been accustomed to a constant temperature of 37° C. in utero, but the environmental conditions of hospital delivery rooms are adjusted for the thermal comforts of adults. Obviously, warming the delivery room environment to conform with that to which the infant has been accustomed would result in acute discomfort for adults, but exposure to cooler environment causes the newborn infant to lose body heat rapidly by evaporation, convection and radiation.

Associated with decrease in the body temperature of the newborn infant are evidences of biochemical stress and change. Such biochemical change does not normally adversely affect the healthy term infant, but in premature infants or those who have birth asphyxia, there is evidence to indicate that cooling might be detrimental.

Apart from biochemical change, the drop in infant body temperature at birth prevents the measurement of body temperature for an indication of disease during the first 6 to 12 hours after birth. There are several serious but treatable conditions, for example hypoglycemia and severe infection, which may be evidenced by hypothermia. However, if the infant is chilled in the delivery room, body temperature cannot be used as a guideline to detect these conditions.

It is desirable to provide two environments within a delivery room to accommodate both the newborn infant and the adults present. If possible, the warmer environment should be limited to the immediate vicinity of the infant and must be carefully controlled.

It is a primary object of this invention to provide a novel and improved infant warmer adapted to develop a controlled temperature environment in the vicinity of an infant.

Another object of this invention is to provide a novel and improved infant warmer which incorporates a positive adjustment feature provided by sized spacer blocks insertable in the support stand for a spaced warming unit.

A still further object of this invention is to provide a novel and improved infant warmer which includes a temperature control responsive to infant body temperature.

These and other objects of this invention will become readily apparent upon consideration of the following specification and claims in conjunction with the accompanying drawing.

IN THE DRAWING

FIG. 1 is a perspective view of the infant warmer of the present invention; and

FIG. 2 is a perspective view of the infant warmer of FIG. 1 attached to an infant support table.

Referring now to the drawing, the infant warmer of the present invention indicated generally at 10 includes an adjustable support section 12 for a heater assembly 14 which may be connected to a base 16. The heater assembly includes an elongated casing 18 preferably of stainless steel, which supports an infra red heating tube assembly 20 and the electrical circuitry therefor. Radiation from the heating tube assembly is directed from the casing through an opening 22 which is covered by an extruded metallic mesh 24 of aluminum or similar mesh material.

The adjustable support section 12 includes a vertical column 26, an L-shaped shelf bracket 28, a support insert column 30 and one or more elevating spacers 32 connected to form a telescoping support. The support insert column is designed to fit within a stub bracket 34 which is attached to one end of the casing 18, and one end of the insert column is retained within the bracket by a bolt 36.

The vertical column 26, the shelf bracket 28, and the elevating spacer 32 are formed of tubular metallic material, such as

the square metal tubing illustrated in the drawing, which is dimensioned to receive the insert column 30. One leg 38 of the shelf bracket forms a sleeve to receive the insert column, which then extends through the elevating spacers and into the vertical column. The elevating spacers are dimensioned to extend the length of the support section 12 by specific increments.

The base section 16 is formed by two spaced parallel legs 40 joined by a cross section 42. The end of the vertical column 26 is secured to the cross section and the vertical column extends at substantially a right angle to the base section. When the infant warmer is upright, the base section and heater assembly are maintained in substantially parallel relationship.

The legs 40 and cross section 42 of the base section 16 are formed of tubular material of the type used in the adjustable support section 12, and are adapted to slide beneath a carrier for the infant. In some instances, it may be desirable to make the infant warmer mobile with the infant carrier, and for this purpose, the base section 12 is eliminated and the vertical column 26 is secured directly to a wheeled infant support table as illustrated in FIG. 2.

The electrical circuitry for energizing the heating tube assembly 20 is controlled by a servocontroller unit 44 which is supported by a shelf 46 secured to a leg 48 projecting laterally from the leg 38 of the shelf bracket 28. This servocontroller is connected to the infrared tube assembly by an output lead 50 and to a suitable power source by an input lead 52.

The desired temperature for the environment in the immediate vicinity of an infant is set into the servocontroller by means of a control dial 54, and the actual body skin temperature of the infant is sensed by means of a thermistor probe 56 which is attached to the skin of the infant. The signal from the thermistor probe passes to the servocontroller unit 44 over a line 58, and operates to determine when the servocontroller energizes the infrared tube assembly 20. Actually the probe forms one leg of an A C bridge which includes a variable leg responsive to the control dial 54. If the temperature sensed by the probe deviates from that set by the control dial, the bridge becomes unbalanced and an amplified error signal is provided to control a relay. The relay in turn determines when power is provided to energize the infrared tube assembly.

The servocontroller unit 44 may be formed by a number of commercially available units such, as for example, the Thermistemp (R) temperature controller, YSI model 71, manufactured by the Yellow Springs Instrument Co. of Yellow Springs, Ohio. This controller operates to cycle the infra tube assembly 20 and accurately maintains a preset temperature environment responsive to actual infant body temperature sensed by the probe 56.

It is imperative that the heater assembly 14 be vertically adjustable relative to the position of an infant, but the heater assembly must never be moved too close to the infant's body. Therefore, the accurately dimensioned elevating spacers 32 are provided to permit adjustment within specified parameters, and once a spacer is included, there is no danger that the support section 12 will slip out of adjustment while the heater assembly is in use.

It is believed that the invention will have been clearly understood from the foregoing detailed description of my now-preferred illustrated embodiment. Changes in the details of construction may be resorted to without departing from the spirit of the invention and it is accordingly my intention that no limitations be implied and that the hereto annexed claims be given the broadest interpretation to which the employed language fairly admits.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An infant warmer for creating a controlled environment of increased temperature about an infant comprising an electrical heating assembly including an elongated casing and infrared heating means mounted within the casing, heating control means connected to control the energization of said heating means, said heating control means being operable to cycle

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said heating means to maintain a preset skin temperature, and support means connected to said casing adjacent one end thereof, said support means including a vertical column assembly adjustable in length to vertically position said infrared heating means in a horizontal plane above said infant, said vertical column assembly comprising an elongated support in said column, one end of which is secured to one end of said elongated casing, a vertical column of tubular material dimen-

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sioned to telescopically receive the free end of said insert column and shelf means to support said heating control means, said shelf means including an L-shaped bracket having a vertical leg and a horizontal leg, the vertical leg of said bracket being formed of tubular material adapted for insertion over said support insert column between said horizontal leg for supporting said heating control means.

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