

March 25, 1947.

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2,417,962

PORTABLE BABY INCUBATOR

Filed April 17, 1944

5 Sheets-Sheet 1



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Fig. 2.

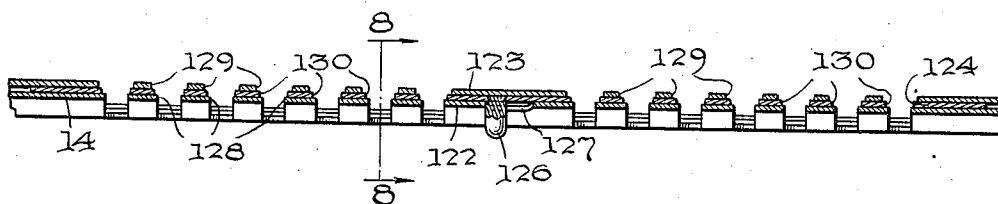
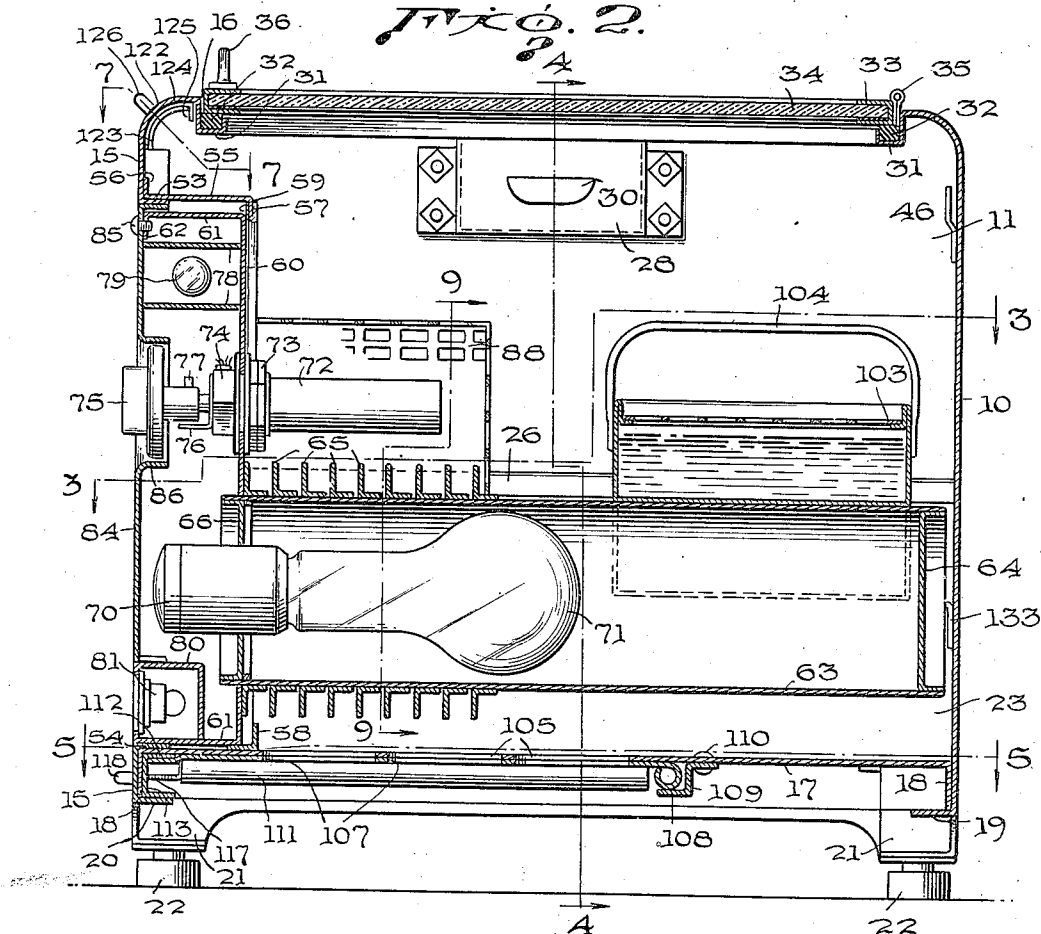


Fig. 3.

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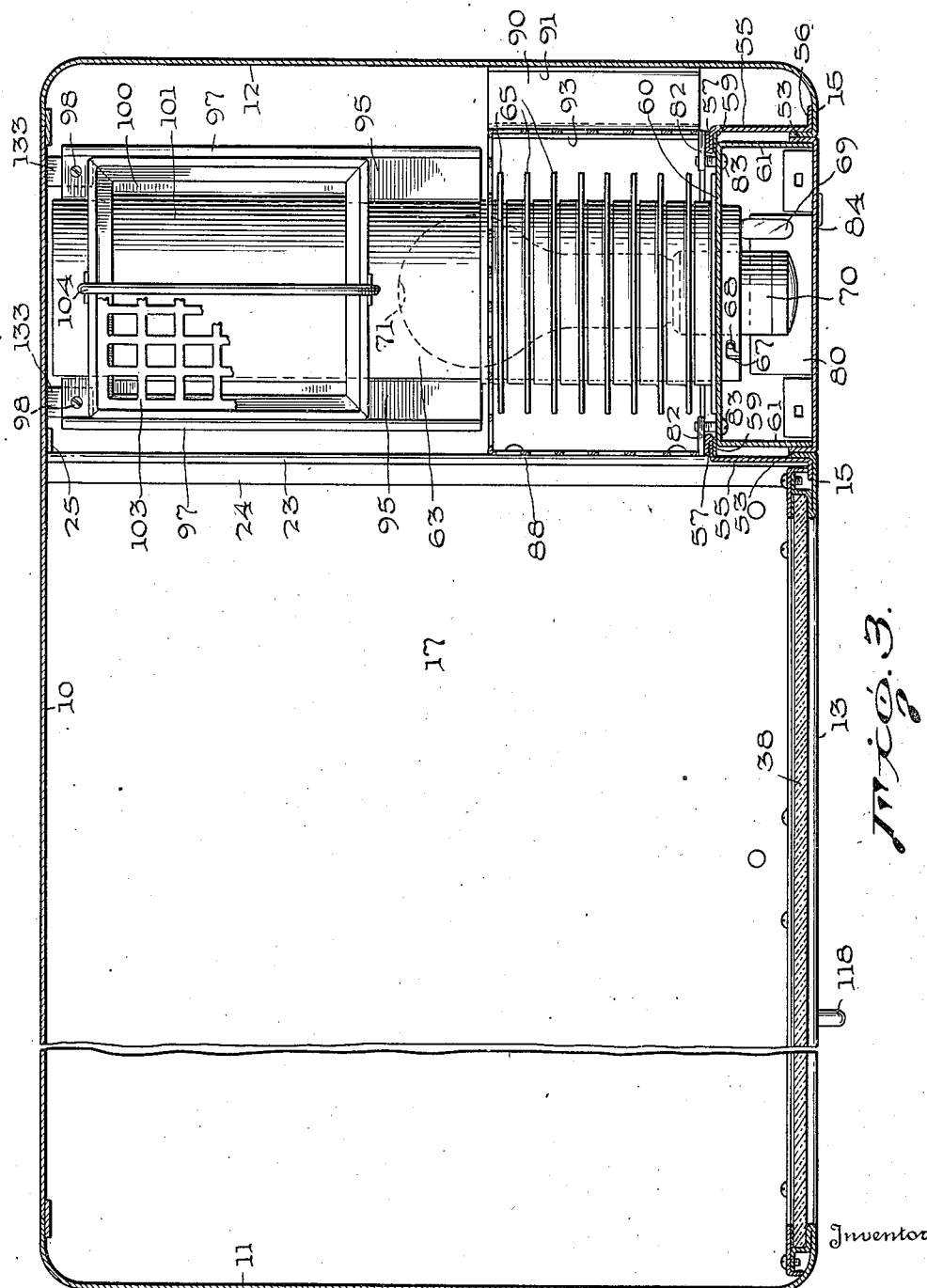
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PORTABLE BABY INCUBATOR

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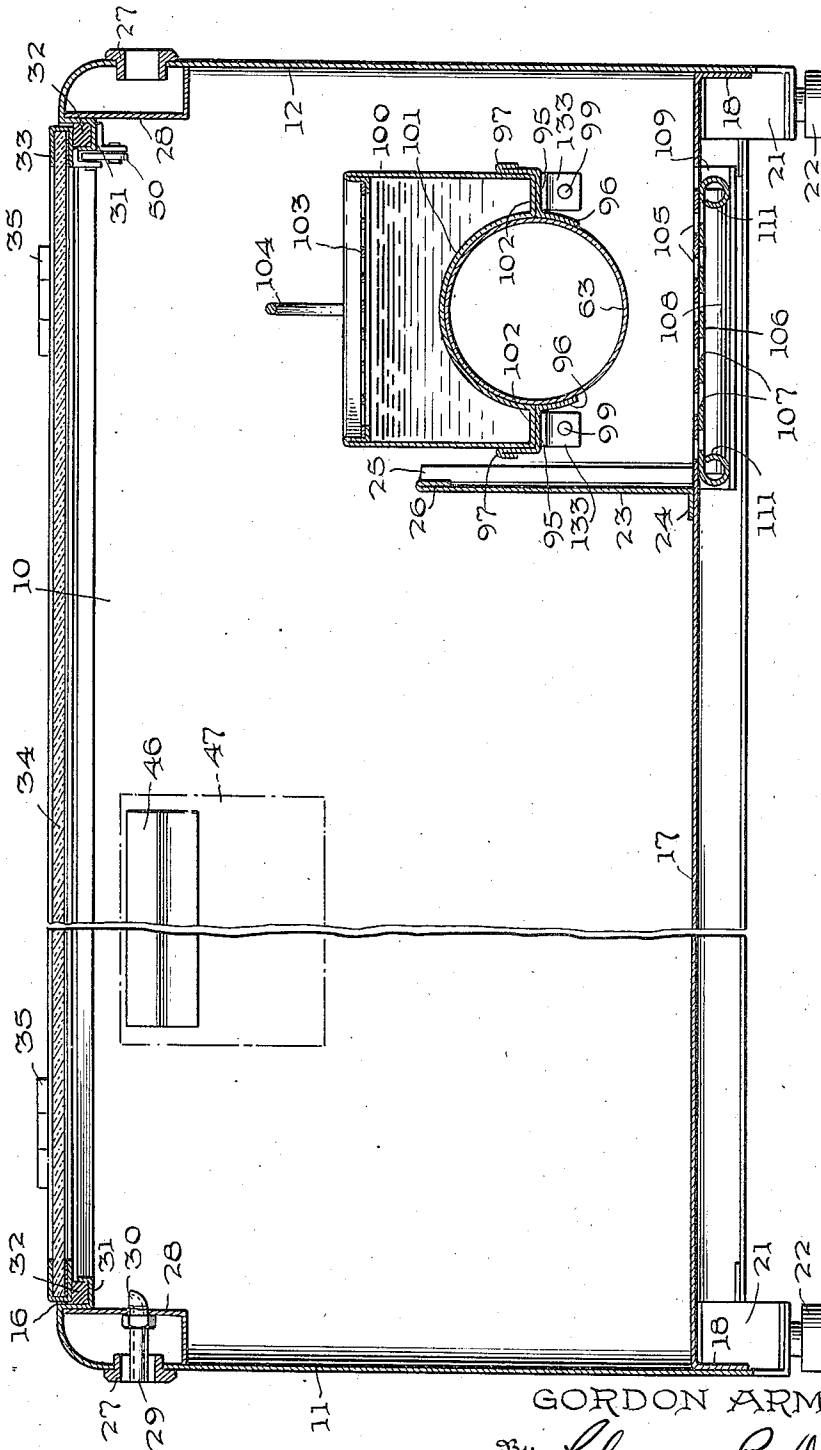


Fig. 4

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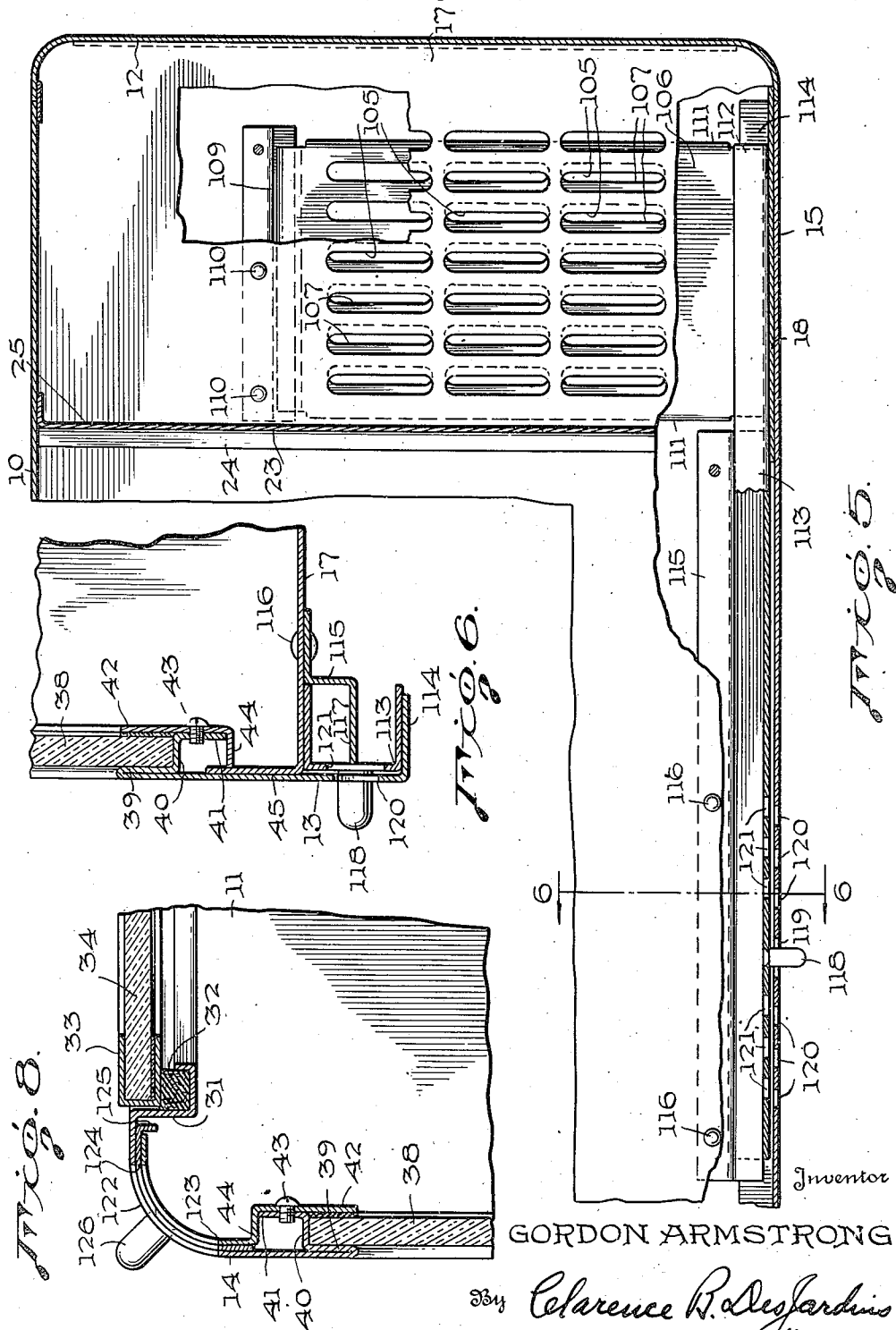
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UNITED STATES PATENT OFFICE

2,417,962

PORTABLE BABY INCUBATOR

Gordon Armstrong, Cleveland, Ohio

Application April 17, 1944, Serial No. 531,476

16 Claims. (Cl. 128—1)

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My invention relates to improvements in portable baby incubators and has to do, more particularly, with improvements in the heating and humidifying means for such incubators and the means for regulating the admission of air thereto.

The principal object of my invention is to provide a simple but efficient apparatus for supplying constant, automatically-controlled heat and increased humidity for both premature and full term babies, for the administration of oxygen to either premature or full term babies, as an ambulance for the transportation of babies, or the administration of oxygen at a high humidity, as a portable incubator for use in remote areas where hospitalization is impracticable, and for the incubation of a full term baby in shock.

A further object of my invention is to provide a baby incubator which is entirely safe in operation, even for the administration of oxygen therapy, because of the fact that the heating mechanism is so constructed that the heating element, the control switches, and all wiring connections are completely sealed off from the main portion of the incubator.

Another object of my invention is to provide a baby incubator having heating and humidifying devices that can be readily removed for inspection, repair or replacement of parts.

A further object of my invention is to provide a baby incubator having improved heating and humidifying means, in which the rate of humidification can be readily controlled by simple manipulations of the operator.

Another object of my invention is to provide, in a baby incubator, improved means for regulating the admission of air thereto.

Further objects, and objects relating to details of construction and economies of operation, will readily appear from the detailed description to follow. In one instance, I have accomplished the objects of my invention by the devices and means set forth in the following specification. My invention is clearly defined and pointed out in the appended claims. A structure, constituting a preferred embodiment of my invention, is illustrated in the accompanying drawings, forming a part of this specification, in which

Fig. 1 is a perspective view of a portable baby incubator embodying my invention.

Fig. 2 is a vertical, sectional view through the

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heating compartment of the incubator, taken on the line 2—2 of Fig. 1.

Fig. 3 is a horizontal, sectional view through the incubator, taken on the line 3—3 of Fig. 2.

Fig. 4 is a vertical, sectional view through the incubator, taken on the line 4—4 of Fig. 2.

Fig. 5 is a fragmentary view, illustrating the means for regulating the admission of air to the heating compartment, taken on the line 5—5 of Fig. 2.

Fig. 6 is a detail, sectional view, taken on the line 6—6 of Fig. 5.

Fig. 7 is a detail, sectional view, taken on the line 7—7 of Fig. 2.

Fig. 8 is a detail, sectional view, taken on the line 8—8 of Fig. 7, and

Fig. 9 is a vertical, sectional view through the heating tube, taken on the line 9—9 of Fig. 2.

In the drawings, the same reference numerals refer to the same parts throughout the several views, and the sectional views are taken looking in the direction of the arrows at the ends of the section lines.

In general, a baby incubator constructed in accordance with my invention comprises a housing divided into treating and heating compartments by a partition wall. This wall, preferably, extends from the bottom wall upwardly about one-half the height of the housing. The incubator is heated by a heating tube mounted in the heating compartment and having an electric lamp mounted within it, preferably in the front portion of the tube. The humidifying means consists of a water receptacle mounted on the rear portion of the tube. This may straddle the tube and be slidably adjustable along it, and is removable from it. The heating tube may be provided with a plurality of heat-radiating fins that are secured to the forward portion of the tube, and the rate of humidification can be varied by moving the water receptacle toward and from the heat-radiating fins.

To provide for the ready removal of the heating unit, I have provided an opening in the front wall of the heating compartment, which is closed by a removable panel, and the heating tube is mounted on said panel and projects rearwardly therefrom into the heating compartment. The rear end of this tube is closed, so that there is no communication between the space within the

tube and in front of the panel, and the interior of the incubator. A lamp socket is mounted in the forward end of the heating tube, and an electric lamp is removably mounted in said socket and located within the tube. The lamp socket may be removably mounted in the tube by means of a disc detachably connected to the forward end of the tube, and carrying the lamp socket. The lamp is automatically controlled, with reference to the temperature within the incubator, by a thermostatic switch mounted on the panel and including a tube projecting rearwardly from said panel into the space above the heating tube, and enclosing the usual heat-responsive elements. The control device for adjusting this thermostatic switch is mounted in and accessible from the front of the panel.

I propose to provide a frame, surrounding the opening in the front wall of the heating compartment, which frame extends inwardly from the front wall, and has laterally extending flanges at the rear thereof, on which the said panel is removably seated. There are side walls integral with this panel, which form with it a compartment, sealed off from the interior of the incubator, and the operating connections for the thermostatic switch, and the electrical wiring connections for the lamp and the switch, are entirely housed within the compartment thus formed, so that they are completely sealed from the heating and treating compartments of the incubator. This compartment may be closed by a front plate, removably secured to said panel, which plate may be removed to permit the removal of the lamp and socket for the purpose of replacing the lamp, and also to permit the complete removal of said panel, including the heating tube and the thermostatic switch.

The bottom wall of the heating compartment has a plurality of openings therein, through which air may be admitted to the incubator, and the admission of air is regulated by means of a plate, slidably mounted on the bottom wall, and having a plurality of openings therein that may be brought into or out of registry with the openings in the bottom wall. Due to the location of this plate, it is difficult to see its position of adjustment with reference to the admission, or cutting off, of the air, and, therefore, I have provided a slide, rigid with the plate, which extends alongside a portion of the front wall of the housing. This slide has a handle readily accessible to an operator and the slide and plate may be adjustably shifted by this handle. Said portion of the front wall of the housing has a plurality of pilot openings therein, and there are corresponding pilot openings in the slide, said pilot openings being in registry with each other when the openings in the regulating plate are adjusted in registry with the openings in the bottom wall of the housing. Thus, the operator can tell the condition of adjustment of the regulating plate by observing whether or not the pilot openings in the slide have been brought into registry with the pilot openings in the front wall of the housing.

Referring to the numbered parts of the drawings, my improved baby incubator comprises a housing, formed in large part of a metal stamping, which includes a back wall 10, end walls 11 and 12, a lower front wall portion 13, an upper front rail 14, and an end front wall portion 15. The top of the housing is open, as at 16. The bottom of the housing is closed by a bottom plate 17, having downturned flanges 18, secured to the front, rear, and end walls of the housing, and

which may rest upon flanges 19 and 20, extending inwardly from the lower portions of the front and rear walls 15 and 10. The housing is formed with suitable feet 21, which may be provided with rubber pads 22.

The incubator housing is divided into treating and heating compartments by a vertical partition wall 23, having a laterally extending flange 24, secured to the bottom plate 17, and another flange 25, at one end thereof, secured to the rear wall 10. The upper edge of this partition wall is stiffened by folding the metal back upon itself, as at 26. As will be seen in Fig. 4, the upper edge of this partition wall is about midway between the top and the bottom of the housing.

Handle members 27 are secured to the end walls 11 and 12, near the top thereof, and, as shown in Fig. 4, these handle members are enclosed by the casings 28, secured to said end walls within the housing. The casing 28, for the handle at the treating compartment end of the housing, supports an inlet tube 29, which may be connected to a source of oxygen in case the incubator is to be used for oxygen therapy. This inlet tube 29 is connected to a flaring elbow 30 within the incubator housing, which elbow is turned upwardly to deflect the oxygen upwardly and prevent it from being delivered directly on the head of the baby in the incubator.

The opening 16 in the top of the incubator housing is framed by a channel member 31, integral with the front, end, and rear walls, and which supports a gasket 32. Said top opening in the housing is adapted to be closed by a cover 33 which comprises the rectangular frame 33, of channel-shaped cross-section, which receives and supports a panel 34 of safety glass, or the like. This cover is hinged to the back wall at 35 and has a handle 36, near the front edge thereof. This cover may be supported in open position by the slotted link 50, pivoted at 51 to the cover, and cooperating with a stud 52, mounted on the end wall 12 and working in the slot of the link 50. The construction of this link may be such as to form a safety catch, to hold the cover in the open position.

In the front wall of the treating compartment, between the portion 13 of the front wall and the front rail 14 of the housing, there is an opening 37 closed by a panel 38 of safety glass or the like. As shown in Figs. 6 and 8, the metal of the front wall is bent back on itself at 39, then, flanged inwardly as at 40, and, then, bent at right angles, to form flange 41 extending parallel to said front wall. This forms a shoulder to receive the edge of the panel 38. The panel is retained in position by a strip 42, secured by screws 43 to flange 41, and the strip may have a forwardly extending flange 44, extending toward the said front wall. As shown in Fig. 6, the forward edge of flange 44 engages a flange 45, turned upwardly from the bottom plate 17 and secured to the front wall 13.

A bracket 46 is secured to the rear wall 10 of the housing, and affords means for removably supporting a panel, indicated generally at 47, which carries operating instructions and also a wet bulb thermometer 48, and a dry bulb thermometer 49.

An opening is formed in the front wall 15 of the heating compartment, said front wall being flanged inwardly at 53, along the sides and top of said opening. At the bottom of the opening, the front wall 15 is flanged inwardly, as at 54, and secured to the forward portion of bottom plate 17. A frame for this opening is made up of the mem-

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bers 55, each having a front flange 56 extended laterally and secured to the inner face of the front wall 15, and a rear flange 57, which is bent laterally and then folded back on itself. An angle member 58 is secured to bottom plate 17, in line with flanges 57, and extends across the bottom of said opening. A gasket, 59, is secured to the front faces of flanges 57. The opening is closed by a panel 60, the edges of which seat on the gasket 59 on flanges 57. Flanges 61 extend forwardly from the sides, top and bottom of said panel 60, and form therewith a compartment for housing a plug receptacle, the operating connections for a thermostatic switch, and the wiring connections between said receptacle and said switch and the heating lamp. The flange 61, at the top of the panel, has its forward portion bent downwardly at 62, to form a means for securing a front plate in position. The panel 60 is detachably secured in position, closing the front opening in the heating compartment, by screws 83, extending through the panel 60 and screwed into lugs 82, secured to the rear faces of the flanges 57, as shown in Fig. 3. Additional screws co-operating with similar lugs may be provided at the upper part of the panel, if desired.

The forward end of a heating tube 63 is securely mounted in the panel 60, the connection of said tube with said panel being gas-tight to seal off communication between the interior of said tube and the front of said panel, and the interior of the incubator housing. Said tube 63 extends rearwardly into the heating compartment and the rear end thereof is closed by a flanged cap or disc 64. A plurality of spaced, parallel, heat-radiating fins 65 are secured to the outer surface of the forward portion of tube 63, in the rear of said panel 60, and, as shown in Fig. 2, the upper edges of these fins are about on a line with the upper edge of the partition wall 23. The forward end of the tube 63 is closed by a removable cap or disc, 66, having a flange at the periphery thereof which carries a plurality of pins, 68, co-operating with bayonet slots 67 formed in the forward portion of tube 63. Said disc 66 carries a pilot light, 69, extending forwardly therefrom, and a lamp socket 70, the portion of the socket, to which the electrical connections are made, extending forwardly from said disc while the part that receives the lamp is within the tube 63. An electric lamp 71 is screwed into said socket 70 and disposed within the tube 63, as shown in Fig. 2.

A thermostatic switch, 74, is also secured to the panel 60 above the heating tube 63, and includes a tube or cylindrical casing 72, housing the usual heat-responsive elements, which is secured to the panel 60 by the lock nuts 73 and extends rearwardly from the panel into the heating compartment above the fins 65 of the heating tube. The connection between panel 60 and the thermostatic switch is gas-tight, so that gas cannot leak from the interior of the incubator into the space in front of panel 60 or into tube 63. The thermostatic switch includes the control knob 75, projecting forwardly from panel 60, by means of which the switch may be adjusted to change the temperature at which the circuit to lamp 71 will be opened or closed. The switch includes a limiting stop arm 76, which co-operates with a stud 77 on the control knob 75. A casing, 78, is secured to panel 60 and side walls 61 thereof, and houses a pilot light 79, located near the upper part of said panel. In the lower part of the compartment formed by the panel 60 and

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side walls 61, there is secured a housing 80, in which is mounted a plug receptacle for receiving a detachable plug connected to a suitable source of electric current. This plug receptacle is connected by suitable wiring with the electric lamp socket 70, the thermostatic switch 74, the pilot light 69 and the pilot light 79, in such a way that, when receptacle 81 is connected to a live source of current, the pilot light 79 will burn. The receptacle is connected to the thermostatic switch 74 and the lamp socket 70, in such a way that lamp 71 will be connected automatically to the source of current whenever the temperature within the heating compartment falls below a certain point, and disconnected from the source of current whenever it rises above that point, as determined by the setting of the control knob 75. The connections to the pilot light 69 are such that it will burn whenever lamp 71 is so connected. The compartment formed by panel 60 and side walls 61 is closed by a front plate 84, removably secured in position by a screw 85 screwed into the flange 62, and having an opening surrounded by the rearwardly extending flange 86, so disposed as to receive the control knob 75 of the thermostatic switch. Plate 84 carries a green jewel 131, in line with pilot light 79, which shows green when the plug receptacle 81 is connected with a live source of current. Plate 84 also carries a red jewel 132, in line with pilot light 69, which shows red when lamp 71 is operating.

A guard grill or casing 88, formed and perforated as shown in Figs. 2 and 9, is secured in position in the rear of panel 60 and surrounds tube 72 of the thermostatic switch. The lower edge of one side of the grill 88 is secured by rivets 89 to the top of the partition wall 23. The lower edge of the other side wall of said grill is secured to a Z-shaped member 90, having an upwardly turned flange 91 fixed to the end wall 12 of the incubator housing, and a downwardly turned flange 92 folded up on itself, as at 93, to form a channel which receives the lower edge of the grill, and which is secured thereto by rivets 94. It will be seen that the lower edge of this grill is in line with the top of tube 63, so that it will not interfere with the removal of panel 60, and thermostatic switch 74 and heating tube 63, secured to and carried thereby.

Supporting members 95 are secured to the sides of the heating tube 63 and extend from a point slightly in the rear of the rearmost heat-radiating fin 65 to the rear end of the tube. Each of these supporting members has a flange 96, curved to conform to the tube 63 and rigidly secured thereto. On the outer edges of members 95, there are provided vertically extending flanges 97. These supporting members 95 are removably secured by the screws 98 to brackets 133, fastened to the rear wall 10 by rivets 99. Thus, the heating tube 63 and panel 60, to which it is rigidly attached, are detachably secured in position, in part, by these screws 98 which must be removed when the panel and the heating tube are to be removed. A water receptacle 100 is provided, which has a semi-cylindrical base portion 101, fitting and straddling the heating tube 63, and, on either side thereof, the flat portions 102 which rest on the members 95. There is a grill-like cover 103 for this receptacle and it is also provided with a handle 104, by which it may be removed or shifted in position. This water receptacle is slidably mounted on tube 63 and supporting members 95, and may be moved conven-

iently toward and from the heat-radiating fins 65, to vary the rate at which the water contained in the receptacle will be evaporated to humidify the air admitted to the incubator.

In that portion of bottom wall 17 which lies below the heating compartment, there are formed a plurality of slots 105 for the admission of air. Slidably mounted beneath bottom 17 is a regulating plate or damper 106, having therein a plurality of slots 107 adapted to be brought into and out of registry with slots 105, by shifting the plate laterally. At its rear end, the plate 106 has a bead 108 formed thereon which rests on the forwardly extending leg of an angle bracket 109, secured to the bottom 17 by rivets 110. Beads 111 are also formed at the sides of the regulating plate 106. A flange 112 extends forwardly beneath the upper leg of a channel member 113, and is rigidly secured thereto. Said channel member 113 is slidably mounted against the inner surface of front wall 15 and rests on the in-turned flange 20. It extends laterally, as shown in Fig. 5, with its lower leg resting on the flange 114 turned inwardly from the portion 13 of the front wall. It is held in this position by a Z-shaped bracket 115, having one horizontal leg secured to the bottom by rivets 116, and the other horizontal leg, 117, extending forwardly and engaging the inner surface of said channel member, thus holding the channel member 113 in position, while permitting it to slide. Channel 113 has secured thereto an operating stud or handle 118, which extends through a slot 119 formed in the front wall 13. Pilot openings 120 are formed in said front wall 13 and corresponding pilot openings 121 are formed in the channel member 113, and are so located that, when the channel 113 is shifted to bring pilot openings 120 and 121 into registry, plate 106, rigidly attached to said channel, will have been shifted so that slots 105 and 107 are in registry to permit the full admission of air to the heating compartment of the incubator. The operating handle 118 and pilot openings 120 are located in the lower front portion of the incubator, where they are readily visible and accessible to the operator. This affords a ready means for adjusting the regulating plate, which is located beneath the bottom of the heating compartment where it cannot be seen easily. Thus, the operator can readily tell what may be the position of adjustment of plate 106, by inspection of the pilot openings 120 and 121.

A damper for regulating the egress of hot air from the incubator is also provided in the upper front portion thereof, as shown in Figs. 1, 2, 7 and 8. Referring to Fig. 8, the front rail 14 is curved as at 122 from the vertical to the horizontal and the rear edge thereof merges into the upper edge of the front leg of channel 31. A correspondingly curved member 123 extends upwardly from and is formed as a part of the front edge of flange 44, being spaced from portion 122 of the front rail. An adjustable plate or damper 124 is provided, which slides between portion 122 of the front rail and member 123, and the rear edge of said plate 124 is bent downwardly, as at 125, behind the rear edge of member 123. An operating stud or handle 126 is secured to damper 124 and extends forwardly through a slot 127, in the portion 122 of the front rail 14. Slots 128 are formed in said portion 122 and correspondingly aligned slots 129 are formed in portion 123 of member 44. The plate 124, also, has a plurality of slots 130 formed therein, which may be

brought into registry with slots 128 and 129 by shifting plate 124 by handle 126.

The operation of my improved portable baby incubator should be very readily understood from the detailed description of the parts that has been given above. It is divided into a treating compartment and a heating compartment, by the partition 23. The treating compartment is of such size that a baby may be placed therein. The incubator is closed by the top cover having the transparent panel 34, through which the child may be observed. It may also be observed through the front panel 38. If the baby is to be subjected to oxygen therapy, the inlet tube 29 will be connected with a source of oxygen, which enters the treating compartment through the flaring elbow 30, the flow of oxygen being directed away from the head of the child. The air admitted to the incubator through the heating compartment is heated by means of the heating tube 63 therein, having the heat-radiating fins 65 thereon and the heating lamp 71 mounted inside of the tube. The heating lamp is turned on and off, automatically, by the thermostatic switch 74, having the heat-responsive tube 72 thereof extending into the space in the heating compartment above the heating tube, the lamp and the thermostatic switch being so wired that the lamp will be automatically turned on when the temperature in the heating compartment falls to a predetermined point, and turned off when it rises above a predetermined point. This point may be controlled by adjusting the control knob 75, which is accessible in front through the front plate 84. The incoming air is humidified by evaporation of water contained in the receptacle 100, which is mounted on the rear portion of the heating tube 63. This receptacle may be lifted off and removed by the handle 104, for cleaning or filling with water. It may be slid longitudinally along the heating tube, to bring it closer to or further from the heat-radiating fins 65 so as to vary the rate of humidification.

It is highly important, especially when the incubator is used for oxygen therapy, that the heating element and the wiring connections be sealed off from the interior of the incubator. I have accomplished this by mounting the heating tube 63, which is sealed at its rear end by cap 64, and the thermostatic switch 74, on the panel 60, which may be removably secured in place and which seals the opening in the front of the heating compartment, when secured in place. The electrical wiring connections are all in the compartment formed by panel 60 and the side walls 61 thereof, which compartment is closed by the removable front plate 84. This plate may be taken off by removing the screw 85, so that the user then has access to the socket 70, in which lamp 71 is mounted. By grasping socket 70 and twisting it and the disc 66, by which it is carried, so that pins 68 are freed from the bayonet slots 67, the disc 66, socket 70 and lamp 71 may be removed, and a new lamp may be placed in the socket in the usual manner. The entire heating unit, including panel 60, thermostatic switch 74 and heating tube 63, may be removed, after front plate 84 has been taken off, by first removing the screws 98 which anchor the rear end of the heating tube, and, then, removing the screws, such as 83, which secure the panel 60 in place. Of course, the water receptacle, 100, is first taken out before this is done. If it is desired to use the incubator in places where proper electric

current is not available for the heating element, the panel 60 and the heating unit may be thus removed, and bags or bottles filled with hot water placed in the heating compartment.

Admission of air to the incubator takes place through the openings 105 in the bottom wall 17 of the heating compartment and may be controlled by the regulating plate or damper 106, the positioning of which is controlled by shifting channel 113 until the pilot openings 120 and 121, at the front of the incubator, are properly located with respect to each other. A damper regulating the egress of air from the incubator is also provided in the top front rail 14, as already described.

This incubator is of such compact design, small size and light weight that it is completely portable and can be picked up and carried anywhere at any time. It is large and sturdy enough for use, day after day, in a hospital, but small enough so that it may be placed on the seat of an automobile, beside the driver or a nurse, and thus taken into outlying districts far removed from a hospital, or in areas where hospitalization is not available, or is impracticable.

I am aware that the particular embodiment of my invention, shown and described herein, can be varied considerably without departing from the spirit thereof and, therefore, I claim my invention broadly as indicated by the appended claims.

What I claim as my invention, and desire to secure by Letters Patent, is:

1. A baby incubator comprising the combination of a housing having front and rear walls and a partition wall extending from front to rear and dividing the housing into a treating compartment and a heating compartment at one end of the treating compartment, an imperforate heating tube mounted in said heating compartment and extending fore and aft therein, means for sealing the interior of said tube from the interior of said heating compartment, an electric lamp mounted within the front portion of said tube, and a water receptacle mounted on the rear portion of said tube.

2. A baby incubator comprising the combination of a housing having a partition wall dividing it into treating and heating compartments, a heating tube mounted in said heating compartment, an electric lamp mounted within the front portion of said tube, and a removable water receptacle straddling the rear portion of said tube and slidably adjustable therealong.

3. A baby incubator comprising the combination of a housing having a partition wall dividing it into treating and heating compartments, a heating tube mounted in said heating compartment, an electric lamp mounted within the front portion of said tube, laterally extending flanges secured to the rear portion of said tube, and a water receptacle having its bottom conformed to and removably seated upon said tube and flanges and adjustable longitudinally thereof.

4. A baby incubator comprising the combination of a housing having a partition wall, of about half the height of the housing, dividing it into treating and heating compartments, a heating tube mounted in said heating compartment below the upper edge of said partition wall, an electric lamp mounted within the front portion of said tube, and a removable water receptacle straddling the rear portion of said tube and slidably adjustable therealong, said receptacle ex-

tending above the upper edge of said partition wall.

5. A baby incubator comprising the combination of a housing having a partition wall dividing it into treating and heating compartments, a heating tube mounted in said heating compartment, a plurality of heat-radiating fins secured to and extending from the front portion of said tube, an electric lamp mounted within said tube, and a water receptacle slidably and removably mounted on the rear portion of said tube.

6. A baby incubator comprising the combination of a housing having a partition wall, of about half the height of said housing, dividing it into treating and heating compartments, a heating tube mounted in said heating compartment, a plurality of heat-radiating fins secured to and extending from the front portion of said tube, the upper edges of said fins lying substantially in the horizontal plane including the upper edge of said partition wall, an electric lamp mounted within said tube, and a water receptacle slidably and removably mounted on the rear portion of said tube and projecting above said partition wall.

7. A baby incubator comprising the combination of a housing having front and rear walls and a partition wall extending from front to rear and dividing the housing into a treating compartment and a heating compartment at one end of the treating compartment, said front wall having an opening therein communicating with said heating compartment, a panel mounted in and closing said opening, an imperforate heating tube mounted on said panel and projecting rearwardly therefrom into said heating compartment, means closing the rear end of said tube whereby the interior thereof is completely sealed from the interior of the heating compartment, a lamp socket mounted in the forward end of said tube and extending forwardly of said panel, and an electric lamp mounted in said socket within said tube.

8. A baby incubator comprising the combination of a housing having front and rear walls and a partition wall extending from front to rear and dividing the housing into a treating compartment and a heating compartment at one end of the treating compartment, said front wall having an opening therein communicating with said heating compartment, a panel mounted in and closing said opening, an imperforate heating tube mounted on said panel and projecting rearwardly therefrom into said heating compartment, means closing the rear end of said tube whereby the interior thereof is completely sealed from the interior of the heating compartment, a disc removably mounted in the forward end of said tube, a lamp socket carried by said disc and extending forwardly of said panel, and an electric lamp mounted in said socket within said tube.

9. A baby incubator comprising the combination of a housing having front and rear walls and a partition wall extending from front to rear and dividing the housing into a treating compartment and a heating compartment at one end of the treating compartment, said front wall having an opening therein communicating with the heating compartment, a panel mounted in and closing said opening, an imperforate heating tube mounted on said panel and projecting rearwardly therefrom into said heating compartment, the rear end of said tube being closed whereby the interior of said tube is completely sealed from the interior of said heating compartment, a lamp

socket mounted on the forward end of said tube and extending forwardly of said panel, an electric lamp mounted in said socket within said tube, a thermostatic switch mounted on said panel and including a tube projecting rearwardly from said panel, outside of said heating tube, and enclosing heat-responsive elements, and operating mechanism mounted wholly in front of said panel.

10. A baby incubator comprising the combination of a housing having a front wall with an opening therein, a frame for said opening secured to said front wall, extending inwardly of the housing and having laterally extending flanges at the rear thereof, a panel closing said opening and removably seated on said flanges, side walls integral with said panel, extending forwardly therefrom and forming therewith a compartment, a heating tube having a closed rear end mounted on and having a sealed connection with said panel and extending rearwardly therefrom, the interior of said tube being completely sealed from the interior of said housing, a lamp socket mounted in the forward end of said tube, and an electric lamp mounted in said socket within said tube, the wiring connections for said socket being entirely within said compartment.

11. A baby incubator comprising the combination of a housing having a front wall with an opening therein, a frame for said opening secured to said front wall, extending inwardly of the housing and having laterally extending flanges at the rear thereof, a panel closing said opening and removably seated on said flanges, side walls integral with said panel, extending forwardly therefrom and forming therewith a compartment, a heating tube having a closed rear end mounted on and having a sealed connection with said panel and extending rearwardly therefrom, the interior of said tube being completely sealed from the interior of said housing, a disc removably mounted in the front end of said tube, a lamp socket carried by said disc, and an electric lamp mounted in said socket within said tube, the wiring connections for said lamp socket being entirely within said compartment.

12. A baby incubator comprising the combination of a housing having a front wall with an opening therein, a frame for said opening secured to said front wall, extending inwardly of the housing and having laterally extending flanges at the rear thereof, a panel closing said opening and removably seated on said flanges, side walls integral with said panel, extending forwardly therefrom and forming therewith a compartment, a heating tube having a closed rear end mounted on and having a sealed connection with said panel and extending rearwardly therefrom, the interior of said tube being completely sealed from the interior of said housing, a lamp socket mounted in the forward end of said tube, an electric lamp mounted in said socket within said tube, the wiring connections for said socket being entirely within said compartment, and a front plate removably secured to said panel and closing the front of said compartment.

13. A baby incubator comprising the combination of a housing having a front wall with an opening therein, a frame for said opening secured to said front wall, extending inwardly of the housing and having laterally extending flanges at the rear thereof, a panel closing said opening and removably seated on said flanges, side walls integral with said panel, extending forwardly therefrom and forming therewith a com-

partment, a heating tube having a closed rear end mounted on and having a sealed connection with said panel and extending rearwardly therefrom, a lamp socket mounted in the forward end of said tube, an electric lamp mounted in said socket within said tube, a thermostatic switch for said lamp mounted on and having a sealed connection with said panel and including a tube projecting rearwardly therefrom and enclosing heat-responsive elements, the electrical wiring connections between said lamp and switch being entirely within said compartment.

14. A baby incubator comprising the combination of a housing having a front wall with an opening therein, a frame for said opening secured to said front wall, extending inwardly of the housing and having laterally extending flanges at the rear thereof, a panel closing said opening and removably seated on said flanges, side walls integral with said panel extending forwardly therefrom and forming therewith a compartment, a heating tube having a closed rear end mounted on and having a sealed connection with said panel and extending rearwardly therefrom, a lamp socket mounted in the forward end of said tube, an electric lamp mounted in said socket within said tube, a thermostatic switch for said lamp mounted on and having a sealed connection with said panel and including a tube projecting rearwardly from the panel and enclosing heat-responsive elements, and means for adjusting said switch including a control knob mounted on said panel within said compartment, the electrical wiring connections for said lamp and switch being entirely in said compartment.

15. A baby incubator comprising the combination of a housing having a front wall with an opening therein, a frame for said opening secured to said front wall, extending inwardly of the housing and having laterally extending flanges at the rear thereof, a panel closing said opening and removably seated on said flanges, side walls integral with said panel extending forwardly therefrom and forming therewith a compartment, a heating tube having a closed rear end mounted on and having a sealed connection with said panel and extending rearwardly therefrom, a lamp socket mounted in the forward end of said tube, an electric lamp mounted in said socket within said tube, a thermostatic switch for said lamp mounted on and having a sealed connection with said panel and including a tube projecting rearwardly from the panel and enclosing heat-responsive elements, means for adjusting said switch including a control knob mounted on said panel within said compartment, the electrical wiring connections for said lamp and switch being entirely in said compartment, and a front plate removably secured to said panel and closing the front of said compartment, said plate having an opening therein receiving said control knob.

16. A baby incubator comprising the combination of a housing having a front wall with an opening therein, a frame for said opening secured to said front wall, extending inwardly of the housing and having laterally extending flanges at the rear thereof, a panel closing said opening and removably seated on said flanges, side walls integral with said panel extending forwardly therefrom and forming therewith a compartment, a heating tube having a closed rear end mounted on and having a sealed connection with said panel and extending rearwardly therefrom, a lamp socket mounted in the forward end

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of said tube, an electric lamp mounted in said socket within said tube, a thermostatic switch for said lamp mounted on and having a sealed connection with said panel and including a tube projecting rearwardly therefrom and enclosing heat-responsive elements, and a plug receptacle mounted on said panel within said compartment, the electrical wiring connections between said receptacle, said lamp and said switch being entirely within said compartment.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,839,580	Myron -----	Jan. 5, 1932
2,093,648	Rice -----	Sept. 21, 1937
2,219,185	Hirleman -----	Oct. 22, 1940
2,243,999	Chapple -----	June 3, 1941
2,353,536	Abbott et al. -----	July 11, 1944