

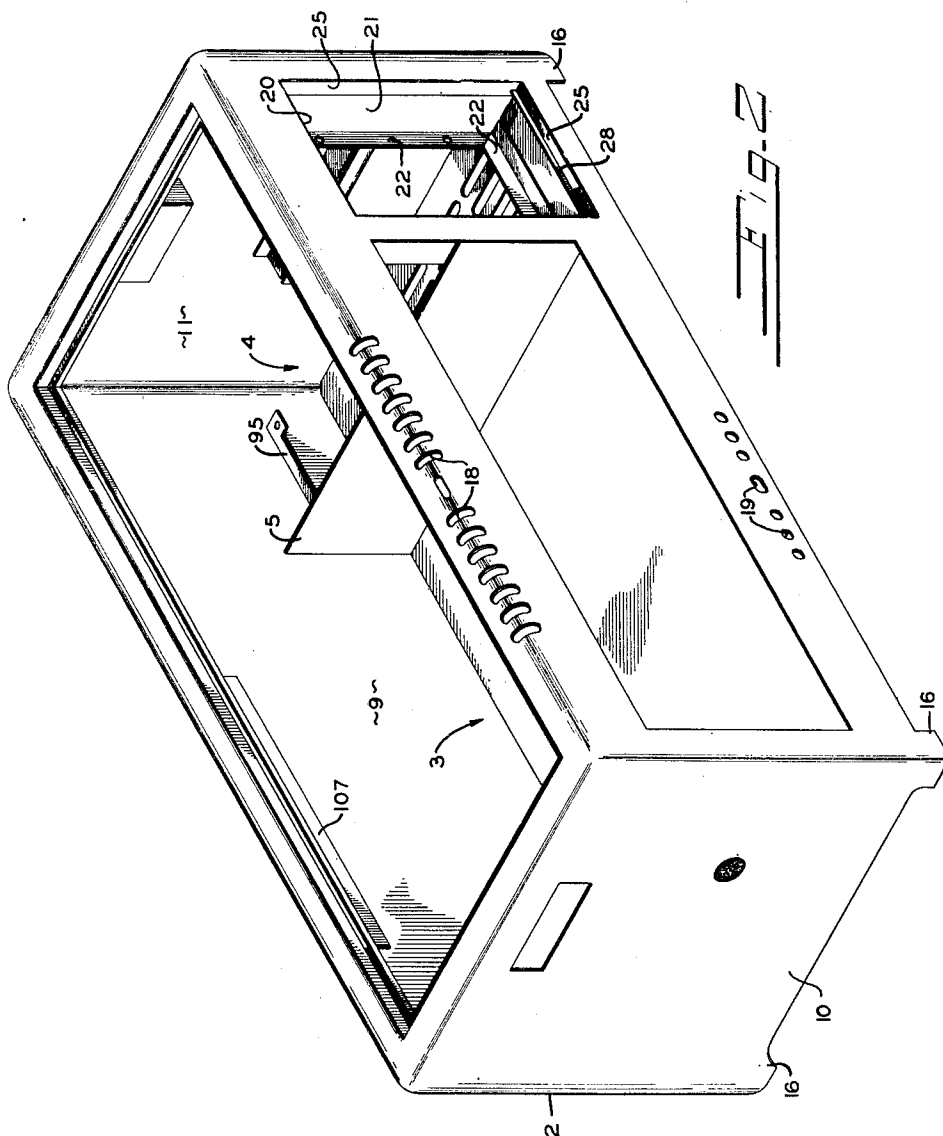
April 19, 1955

G. ARMSTRONG ET AL
EXPLOSION-PROOF BABY INCUBATOR

2,706,473

Filed June 5, 1951

6 Sheets-Sheet 2

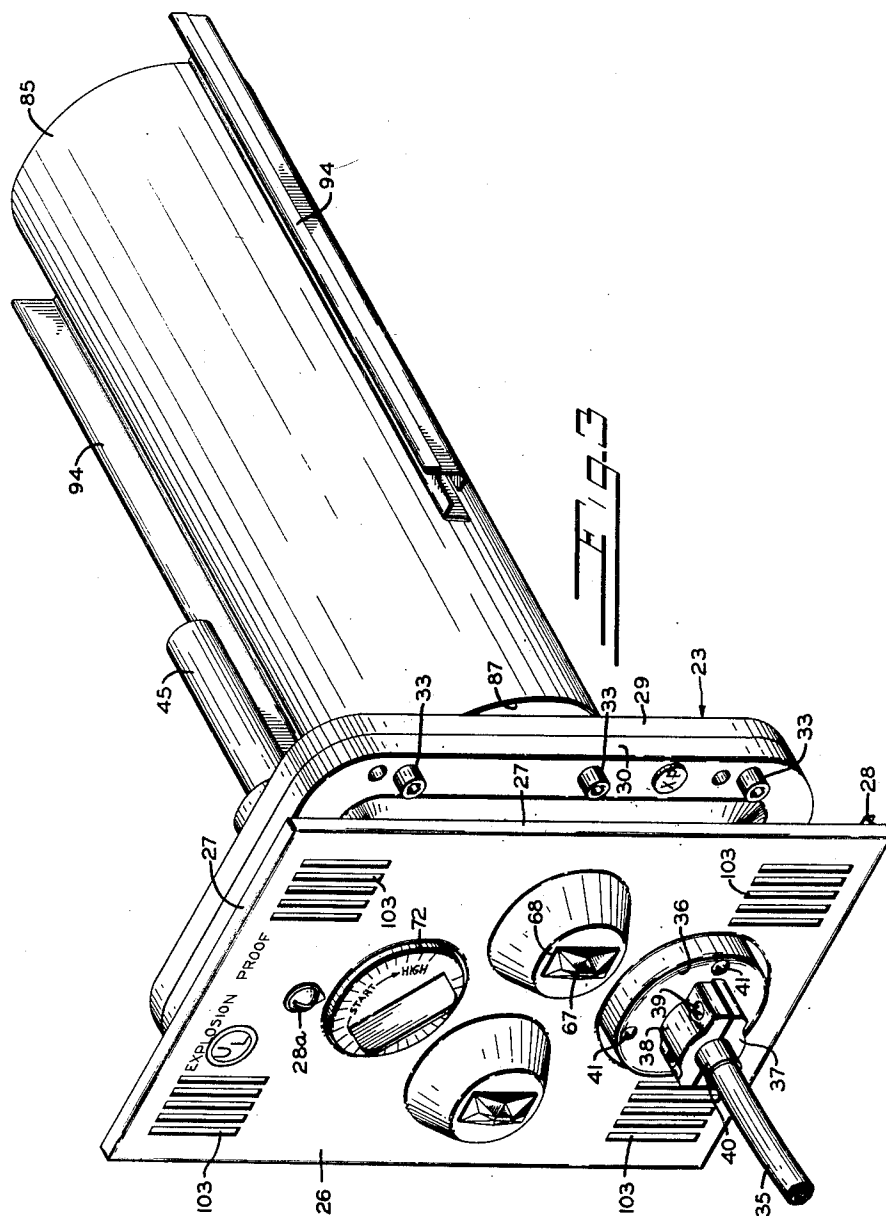


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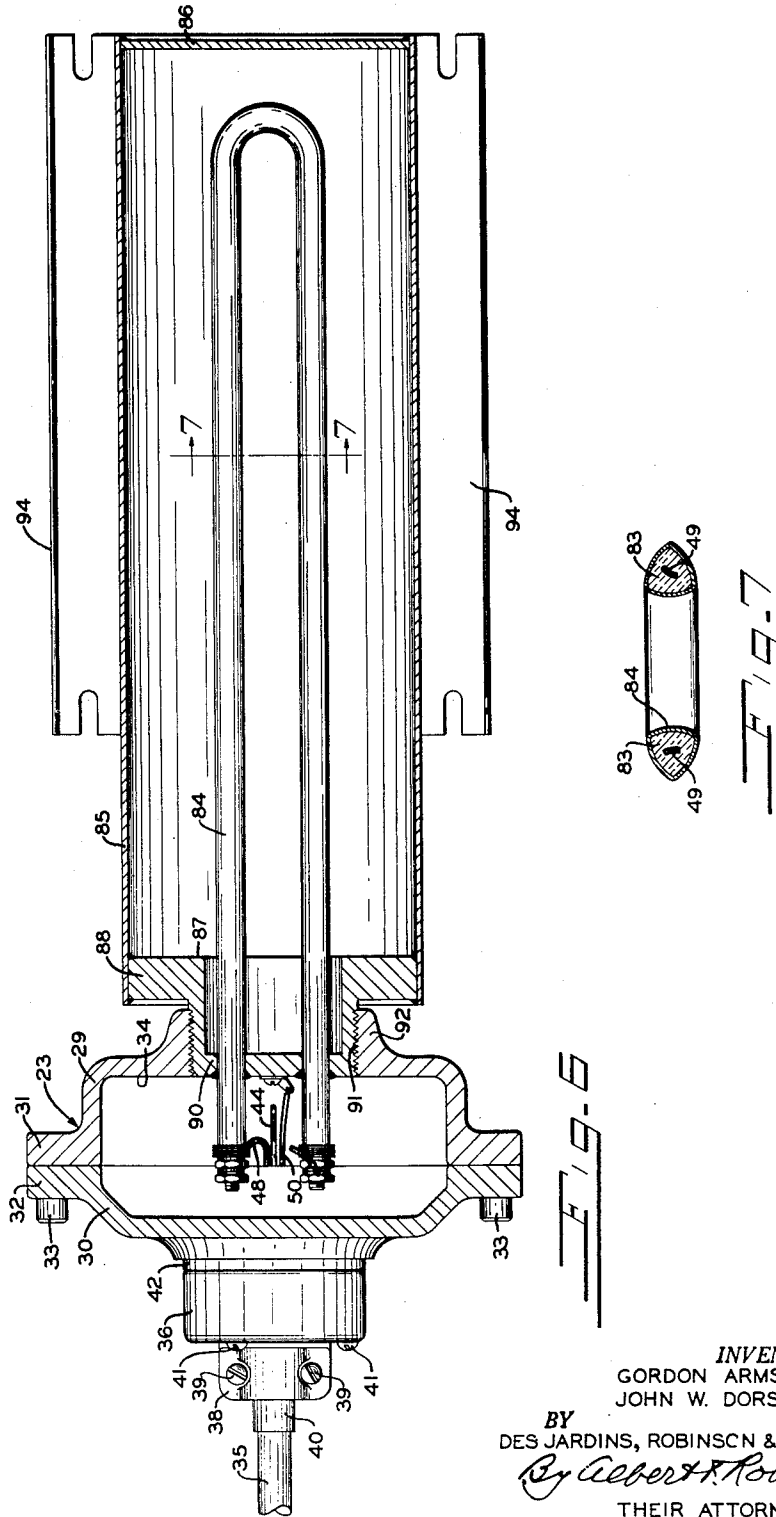
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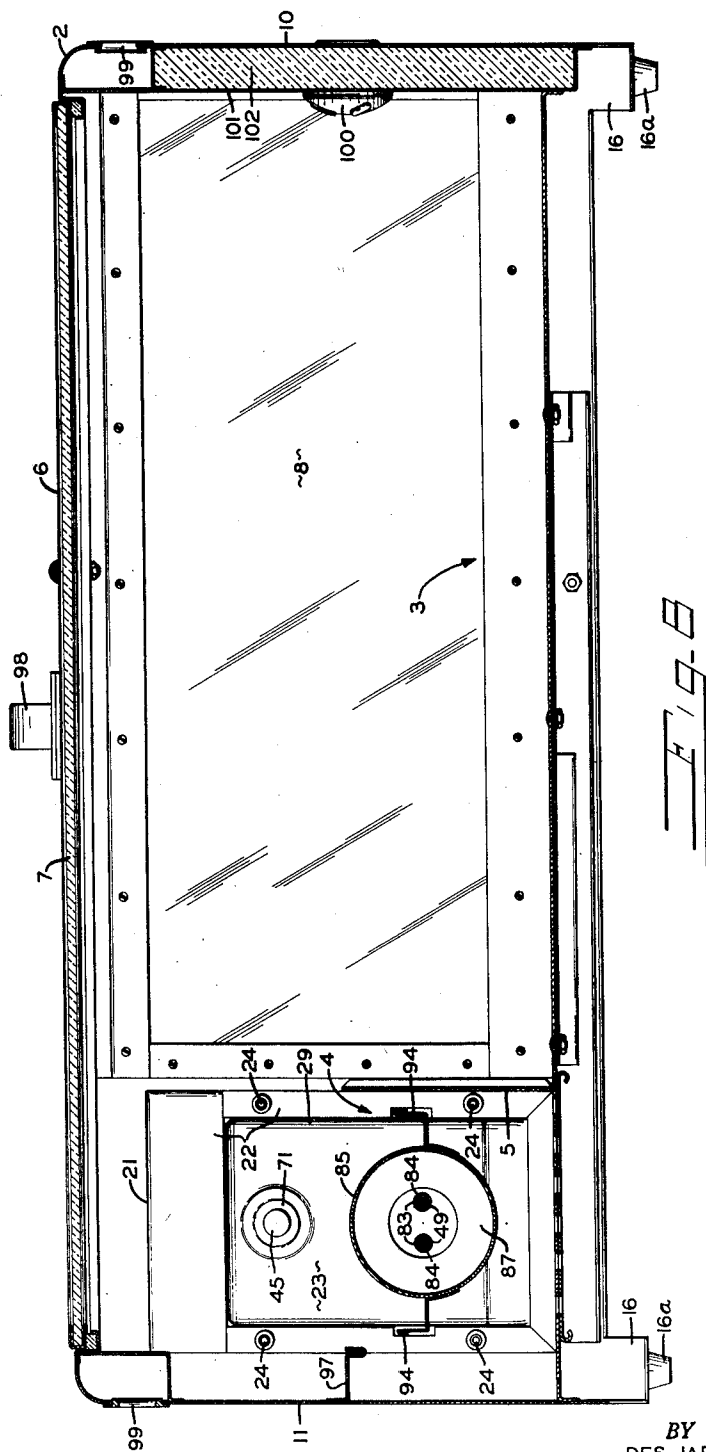
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EXPLOSION-PROOF BABY INCUBATOR

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Application June 5, 1951, Serial No. 229,892

28 Claims. (Cl. 128—1)

This invention relates to explosion-proof baby incubators for use in hazardous gas areas, such as hospitals, surgeries and delivery rooms, or other such places where hazardous or explosive gases may be present, and it more particularly pertains to explosion-proof baby incubators having treating and heating compartments and that are made from sheet metal coated with material that is highly conductive to electricity for dissipating static electricity therefrom, especially from the entire exterior wall surface of the incubator and from the interior wall surface of the treating compartment.

The invention is an improvement over baby incubators in which only the heating element and the electrical connection therefor are sealed to insulate them from the oxygen gas used within the treating compartment of the incubator but are not sealed to insulate them from the surrounding atmosphere, and it is also an improvement over those incubators of the prior art by being exteriorly and interiorly coated for dissipation of static electricity from the walls of the incubator. A film of transparent varnish, lacquer, enamel, or the like, may be applied over the coating on the exterior surface to provide a glazed finish. The prior art over which the present invention is an improvement is represented by U. S. Patent No. 2,417,962 issued to Gordon Armstrong, one of the joint applicants here, on March 25, 1947.

This case is a continuation-in-part of our earlier applications Serial No. 173,466, filed July 12, 1950, and Serial No. 194,828 filed November 9, 1950, both now abandoned.

Accordingly, the principal object of our invention is to provide a baby incubator which is of a construction that is explosion proof under all conditions as to the surrounding atmosphere where the incubator is used.

Another object of the invention is to provide a baby incubator having a housing unit in which all electrical connections for the incubator are completely housed to be sealed from the surrounding atmosphere for preventing any explosion thereof or confining within said housing unit any explosion resulting from the electrical parts and their connections.

Another object of the invention is to provide a housing unit for a baby incubator containing all of the electrical parts and their electrical connections, said unit being detachably connected to the incubator.

Another object of the invention is to provide a baby incubator having a heating device which distributes the heat over a uniformly heated surface and prevents a concentration of the temperature above 356° F. at any one point in said heated surface.

A still further object of the invention is to provide a heater for a baby incubator having a heat dissipating area which is heated by a heating device but is prevented from being heated above a predetermined temperature.

A still further object of the invention is to provide an electric baby incubator of sheet metal construction coated with highly conductive material to dissipate static electricity from its wall surfaces.

Further objects, and objects relating to details of construction and economies of operation, will appear from the detailed description to follow. In one instance we have accomplished the objects of our invention by the device and means described in the following specification. Our invention is clearly defined and pointed out in the appended claims. An incubator constituting a preferred embodiment of our invention is illustrated in the accom-

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panying drawings forming a part of this specification, in which:

Fig. 1 is a front elevational view of an incubator embodying our invention.

Fig. 2 is a perspective view of the incubator with the housing unit removed from the heating compartment and also with the top cover lid removed.

Fig. 3 is a perspective view of the readily detachable housing unit which is fitted in the opening in the front wall of the heating compartment with the heating surface projecting into said compartment.

Fig. 4 is a vertical, transverse, cross sectional view on line 4—4 of Fig. 1.

Fig. 5 is a diagrammatic view of the wiring for the electrical parts of the incubator.

Fig. 6 is a horizontal, transverse, sectional view through the housing unit and the sub housing enclosing the heating element.

Fig. 7 is a transverse sectional view on line 7—7 of Fig. 6.

Fig. 8 is a vertical transverse sectional view taken through the cabinet looking toward the front wall.

In the drawings the same 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 line.

In general, our invention comprises a chambered rectangular box-like cabinet 2 of any suitable material having a treating compartment 3 in one end occupying the greater part of the main chamber and a heating compartment 4 at the other end, the two compartments being separated by a transverse division wall 5 vertically extending about one-third of the height of the chamber to serve as a partial end closure for the treating compartment to protect the occupant from the heating equipment. The open top of the cabinet is closed by a cover 6 hinged to the top of the cabinet at the back wall and having a transparent panel 7 of glass or plastic mounted thereon for giving visibility to the interior of the compartments. There is also an opening in the front wall of the treating compartment for having a transparent panel 8 mounted therein, and transparent panels may, if desired, be mounted in the opposite rear wall 9 and the two end walls 10 and 11 so as to provide visibility into the interior of the cabinet through these sides as well as through the top and front sides.

The cabinet is adapted to be supported on a metal stand 12 having a plurality of legs 13 carrying electrically conductive casters 14 on their bottom ends. There is a top 15 fitted to the inside of the legs 13 slightly below their top ends so that the cabinet can be seated on the top 15 between the upwardly projecting top ends of the legs for being held against transverse displacement. Legs 16 can be provided at each corner on the bottom of the cabinet 2 with electrically conductive feet 16a in order to make better ground with the stand or any other support on which the incubator is placed. A utility shelf 17 is fixed to the inside of the legs intermediate their top and bottom ends.

A series of perforations 18 are formed in the front wall of the treating cabinet above the transparent panel, and other perforations 19 are formed in the same wall below the panel to cooperate with slidable perforated strips that provide dampers for controlling the concentration of the oxygen within the treating chamber.

The cabinet, as shown in Fig. 2, is made of sheet metal surfaced inside and out with a film coating of electrically conductive metal particles, preferably aluminum, suspended in a carrier vehicle, this coating being applied in any desirable way, such as spraying. The exterior wall surface is finished with a thin film of transparent coating, the film being sufficiently thin so as not to impair the electrical conductivity of the metal coating surface but simply to provide a decorative and protective glaze film. The glaze film may be conventional varnish, lacquer, enamel or resinous compositions, such as polyethylene, vinyl resin, or the like. These terms are used broadly for any suitable finish film coating.

The support stand on which the cabinet is mounted is also sprayed with electrically conductive metal particles suspended in a vehicle carrier, this coating being

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applied to the top, the shelf and the legs. The outside surfaces of the legs are finished with the glazed film coating of transparent material the same as is the exterior surface of the cabinet, including the hinged top. No film finish coating is applied to the top and shelf of the stand, or at least to their upper sides.

The front wall of the heating compartment has a rectangular opening 20 therein to receive a rectangular mounting frame 21 having a back wall 22 against which a sectional housing unit 23 is secured by fastening screws 24. A peripheral flange 25 surrounds the front edge of the side wall of the frame for overlapping the margin of the opening 20 in the front wall of the cabinet to permit the rectangular frame 21 being fastened in place as by welding. A face panel 26 is flanged at 27 to fit inside of the peripheral flange 25 surrounding opening 20 and is held in place at its bottom edge by a lip and tongue connection 28. A bolt 28a fastens the panel to the housing unit near its top end, thereby enclosing it within the frame chamber, certain perforations being made within the face panel to expose certain parts, as hereinafter described, that are attached to the adjacent wall section. The invention is not limited, however, to any specific manner of attaching the housing unit to the incubator.

The housing unit 23 comprises two metal sections 29 and 30, each of which has surrounding flanges 31 and 32, respectively, for mating together in abutting relation to be secured by bolts 34. The two sections are hollowed on their adjacent inside faces to provide a chamber 34 therebetween when the sections are assembled together. Various parts are mounted on the housing to be a part of the unit.

The end of an electric power cable 35 is fitted to a hollow cast aluminum cover 36 attached to one of the sections. There is an integral hub portion 37 on the cover 36 for mating with a complemental cap section 38 which is clamped to the integral hub section by bolts 39. A composition bushing or sleeve 40 of such protective material as rubber surrounds the end of the power cable to be interposed between it and the clamped hub portion of the cast aluminum cover. This also seals the end of the cable which is connected to the housing unit. The cast aluminum cover 36 is secured to the outside wall of section 30 of the housing by means of bolts 41, there being an insulating disc 42 of molded resinous composition, such as "Bakelite" or the like, interposed between the housing section and the cast aluminum cover to be clamped in place when these parts are secured by the bolts 41. This insulating disc 42 is provided with three single hole solderless pressure lugs 43 for connecting one of the wires of the three conductor power cable to the wire 44 leading to thermoswitch 45, the wire 46 leading to the power pilot lamp 47 and the wire 48 leading to the looped resistance wire 49 of the heating device. The wires from the power cable and the ground wire 50 are passed through a sealing composition that is fitted in a recessed hub portion 52 on the housing section 30 opposite to and in longitudinal alignment with the hub portion of the cast aluminum cover.

The power pilot lamp 47 comprises a conventional socket 53 with a light bulb 54 screw-threaded therein, and suitable wiring is connected to the socket. The power pilot lamp is contained within a holder 55 that is screw-threadedly fitted to a recessed hub 60 of the housing section by screw threads 61 formed on the outside wall of the holder and on the wall of the hub portion 60. The socket 53 is screw-threaded at 62 in the end of the holder 55. The screw-threaded connection of the holder with the wall of the housing section not only secures said holder in place but provides a baffle for sealing the connection between said members against the ingress of air into the housing chamber from the surrounding atmosphere. The holder 55 is of sufficient length to project somewhat beyond the end of the light bulb for a transparent lens 63, fitted over the end of the socket, to be spaced therefrom, the lens being clamped in place by a cap 64 having its surrounding wall 65 screw-threaded to the exterior wall of the socket. The end of cap 64 is perforated at 66 to overlie the transparent lens for permitting the light from the bulb to be transmitted to a translucent colored lens 67 that is mounted in embossment 68 of the front plate 26. Accordingly, the chamber in the light bulb holder is tightly sealed against the ingress of air from the surrounding atmosphere as is the main chamber in the housing unit containing the

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wire connections for the light bulb socket. This power pilot light indicates when the electric power is on and off. There is also a heater pilot lamp 69 of similar construction to the power pilot lamp and similarly mounted in the housing section to be connected to the electric circuit for indicating when the heater is on and off.

One end of the thermoswitch 45 for the heating element is screw-threaded at 70 in the recessed hub portion 71 of the housing section 29 and is connected in the electrical circuit by suitable wiring hereinafter referred to. This thermoswitch is automatically turned on and off to regulate and control the temperature of the heating element. A control knob 72, pinned by a set screw 73 to one end of a shaft 74 that is screw-threadedly connected at 75 within the recessed hub portion 76 of the housing section 30, is for setting the thermoswitch to the desired temperature. This screw thread connection 75 is also an air baffle to exclude ingress of air. The control knob 72 projects through a recess provided in front plate 26 to be accessible to the operator at the front of the cabinet. The opposite end of the shaft 74 has a slotted connection 79 fitted thereto to extend over the end of the operating shaft 80 of the thermoswitch. A transverse pin 81, fixed to the shaft 80, projects within a longitudinal slot 82, open at one end, which is formed through the wall of the slotted connection 79.

The heating element comprises resistance wire 49 of any length with its opposite ends wired to the electrical circuit for the power cable, the thermoswitch, and the heater pilot lamp. The resistance wire, looped at one end to provide legs, is embedded within any mineral insulation material 83, such as asbestos, mineral wool, or the like, and jacketed throughout its length by a metal covering 84, shown to be substantially triangular in cross-section in the drawing but which may be of any cross-sectional configuration. The end portions of the jacket extending into the main chamber are cylindrical. This jacket is a seamless tube or shell of suitable alloy steel. The metal jacketed insulated heating element is enclosed within the sub-chamber surrounded by a sub-housing comprised of a thin cylindrical tube 85 sealed at one end by a head 86 (Fig. 6) and at its opposite end by a head 87. The head 86 could be integrally formed with the tube 85, but it is preferably separately formed and sealed to the end of the tube in any desired manner as by welding. The head 87 has a cylindrical drum portion 88, fitting into the end of the tube 85 with its peripheral edge abutting the interior wall of said tube. This end of the tube is secured to the head by welding or other means. A neck 90 projects from the head 87 with a surrounding threaded peripheral wall for being screw-threadedly connected at 91 to the hub portion 92 in the housing section 29. The head also has two perforations formed therein for reception of the opposite ends of metal jacket 84 surrounding the heating element. One end of the jacket projects through one of the perforations in the head, and the other end projects through the other perforation, both being sealed to the surrounding walls of the perforations to hermetically seal the sub-chamber. The neck 90 of the head is secured in place in the hub portion 92 by a set screw threaded through the wall of the hub portion in the housing section 29. The mating screw-threads are tightly fitted to air seal the fitted parts. The heating element extends substantially throughout the entire length of the sub-housing to heat the surrounding tube of uniform construction and provide a more uniformly heated surface for a conventional water container (not shown) having its bottom surface conforming to the top segment of the heating tube to be seated thereon and held by the supports 94 which are fixed to the opposite sides of the tube as by welding. The looped end of the heating wire, including its jacket, is, of course, spaced from the adjacent end wall of the surrounding tube. The surface area of the wall of the tube is of such proportion in respect to the wattage of the insulated heating element within the tube that it can be uniformly heated up to but not in excess of 356° F. The temperature to which the wall of the tube can be heated can be further controlled by filling the sub-chamber between the metal jacketed heating element and the surrounding housing with thermal insulating material, thereby dividing the single air space into many small cells. The resistance wire is entirely confined within the sub-chamber of the tube with only its electrical terminal lug portion projecting into the main chamber of the housing

unit. Accordingly, the heating element is hermetically sealed within the sub-chamber with only its terminal end wire connections in the main chamber. The hermetic seal not only excludes explosive gases in the surrounding atmosphere from entering the sub-chamber but the hermetically sealed sub-chamber provides for the surrounding wall surface of the sub-housing being more uniformly heated.

Since the insulated heating element and the surrounding tube which provides the heating surface extend across the entire length of the heating chamber, and the water containing pan is supported on the tube, the end of the tube is supported on a bracket 95 that is fixed, as by welding, to the inside of the back wall of the cabinet at a proper elevation. The ends of the supports 94 on the heating tube may be clamped to the bracket 95 by clamp bolts or screws 96. This tight connection between the bracket, also coated with conductive coating, and the support assures a positive electrical connection between the walls of the incubator and the housing unit to assure conductivity to the ground wire of any static that may occur. Another bracket 97 is fixed in position on the end wall to support one end of a protecting screen (not shown), its opposite end being fixed to the compartment partition 5. This screen spans the heating compartment over the exposed part of the tube 85.

The lid cover that is pivoted to the top of the cabinet is provided with a handle 98 for opening and closing the cover. For convenience in lifting the cabinet, there is provided at each end, an opening formed near the top of the end walls, in which is placed a handle piece 99. The end wall adjacent the treating chamber is provided with a nozzle to which a conduit from an oxygen tank is fitted for feeding oxygen to the treating chamber, and associated with this nozzle is a baffle means 100 for discharging the gas upwardly or downwardly. This end wall of the treating compartment is insulated in order to cause better circulation within the incubator, the opposite end wall being non-insulated. Insulation may be provided by having the end wall of double sheeting 101 with the wall space between the sheets filled with thermal insulating material 102.

The face panel 26 is provided with two embossments, one for each of the two pilot lamps which are exposed to view through the face panel as above described. The control knob for the thermostatic switch is also on the front of the face panel. Any number of louvers 103 are provided in the face panel, one being shown in each of the four corners.

There is provided within the treating chamber a dry bulb thermometer (not shown) and a wet bulb thermometer 105, both of which are supported on a panel 106 containing scales, charts, and other information regarding proper operation of the incubator. The panel 106 is supported against the back wall 9 on a bracket 107 in position to be easily read through the transparent panels 7 or 8 without opening the cover lid 6, these parts being conventional accessories in use with incubators.

The electrical resistance wire is heated to provide a temperature which is no higher than 356° F. at any point on the exposed heated surface of the surrounding tube, and this temperature is distributed throughout the length of the resistance wire so that temperature is not concentrated at any point on the exposed heated surface of the tube. The resistance wire is embedded throughout its length in the insulating material and jacketed by the metal covering. This metal covering is shielded by the surrounding tubing and completely out of contact therewith by an intervening air space. Accordingly, there is no possible chance of the resistance wire of the heater burning through to the exterior of the spaced surrounding heat radiating tubing, and any emanating sparks will be within the confines of the surrounding tubing. So, too, any sparks emanating from the electrical wiring will be confined within the chamber of the housing unit.

While we have shown the sub-housing for the heating element as a separate unit from the section 29 of the main housing, it will be understood that it can be integrally formed therewith. However, its construction as a separate unit detachably connected to the section 29 facilitates the mounting of the heating element therein. Functionally, however, it is an integral part of the main housing unit and attached to and removed from the incubator as a part of said housing unit. Then, too, it

is a separate unit that is detachably connected to the main housing unit.

Referring to the wiring diagram in Fig. 5 there is a return wire 108 between the power cable and the power pilot lamp. Wire 109 connects the thermostatic switch with the heater pilot lamp, and the wire 110 connects one of the ends of the resistance wire of the heater with the wire 109. This wiring completes the circuit along with the wiring previously described. As power is supplied to the incubator, the power pilot lamp 47 is lighted and will continue so long as the power is flowing through the power cable 35. The heater pilot lamp 69 is lighted when the thermostatic switch is turned on, allowing power to pass therethrough and through the heater. This light remains on while power is supplied to the heater by the thermostatic switch.

From the foregoing description, it is apparent that the incubator is not only explosion proof as a result of any electrical sparks generated from the electrical parts of the incubator, their power supply, and the electrical connections therebetween, but it also is explosion proof against static electricity on the exterior and interior surfaces. Static electricity on the exterior surface is generated by persons working around and brushing against the incubator and the stand on which it is mounted, and static on the interior surface of the treating compartment is mainly caused by bedding placed therein and the garments of the occupant brushing against the floor and walls. Any static caused by this or in any other way will be readily dissipated, either through the conductive finish on the inside walls of the cabinet and into the housing unit to the ground wire 50, or through the finish on the outside of the walls and through the feet 16a to the stand and then to the floor.

All electrical parts for the incubator and the end of the power cable are mounted on the housing unit with their terminal fittings and the electrical wiring contained and sufficiently sealed within the chamber of said housing unit either to prevent any explosion therein or isolate it from the surrounding atmosphere, said unit being readily detachable from the mounting frame surrounding the opening in the front wall of the heating compartment. Accordingly the housing unit, including the heating unit and all other electrically operated parts, can be readily removed from the cabinet for being serviced and a new unit placed therein so that the entire incubator does not need to be returned to the manufacturer for servicing of the heating unit.

The housing unit is completely sealed to avoid unauthorized tampering therewith, and insertion in or removal of the heating unit from the incubator does not interfere with any of the other working parts of the incubator.

Effective heating is provided throughout the heating compartment of the incubator with the heat uniformly distributed and without any danger of the temperature being concentrated at any one point. The temperature is maintained below a maximum point or degree and with no danger of a spark either from the heating element, the electrical connections or other electrically connected parts coming into contact with the surrounding atmosphere. Any explosion resulting from explosive gases will take place entirely within the chamber of a housing unit and be sealed from the surrounding atmosphere, but the amount of any explosive gas therein, even if there be any at all, will be relatively small as will be any explosion resulting within the unit. Accordingly, the device is entirely and completely explosion proof as to the surrounding atmosphere and also as to the oxygen used with the incubator.

The conductive feet on the bottom of the incubator and the electric conductive stand on which the incubator seats provide for grounding without any additional connections, and said incubator is automatically grounded when it is placed on the stand.

We are aware that there may be various changes in the construction of our device, and, therefore, our invention is limited only by the appended claims.

Having thus described our invention, what we claim as new and useful and desire to secure by United States Letters Patent, is:

1. An explosion-proof baby incubator having a treating compartment and a heating compartment surrounded by top, bottom and side walls, some of which have trans-

parent panels mounted therein, electrically conductive coating material applied to surface the exterior and interior sheet metal wall portions of the incubator for dissipating static electricity, an hermetically sealed heating unit fitted to one side wall of the incubator and extending through the heating compartment adjacent to the opposite wall, and means for electrically grounding the incubator.

2. The explosion-proof baby incubator set forth in claim 1 in which the conductive coating on the exterior wall surface is covered with a film coating which provides a glaze finish without impairing the conductivity of the under coating.

3. An explosion-proof baby incubator having a treating compartment and a heating compartment surrounded by top and bottom side walls, some of which have transparent panels mounted therein, and one side wall of the heating compartment being open, an electrically conductive coating material applied to the exterior and interior sheet metal wall portions, means for electrically grounding said incubator, and a readily detachable chambered sectional housing unit fitting into the open side wall of the heating compartment, said housing unit having mounted thereon the electrical accessories to be used with the incubator, including an hermetically sealed heating means projecting within the heating compartment, an electrical power cable, and wiring connections between said power cable and said electrical accessories, said housing unit being sufficiently sealed to isolate any explosion within said housing unit from the surrounding atmosphere.

4. The explosion-proof baby incubator set forth in claim 3 having a heating wall of uniform heating area surrounding the heating element and insulated therefrom.

5. The explosion-proof baby incubator set forth in claim 4 in which the surrounding heating wall is so proportioned in heat dissipating capacity to the heating power of the heating element that said wall is not heated in excess of the critical temperature.

6. The explosion-proof baby incubator set forth in claim 5 in which the surrounding heat dissipating wall of the cabinet extends substantially entirely through the heating compartment adjacent to the opposite side wall to be grounded by the electrically conductive coating.

7. The explosion-proof baby incubator set forth in claim 6 in which the surrounding heat dissipating wall of the cabinet extends through the heating compartment and is attached to the opposite side wall for being grounded by the conductive coating.

8. The explosion-proof baby incubator set forth in claim 7 having a thin film coating applied to the exterior surfaces of the top and wall portions.

9. The explosion-proof baby incubator set forth in claim 8 having a face panel attached to the housing unit and covering the wall opening in which the housing unit is mounted.

10. The explosion-proof baby incubator set forth in claim 3 having each of the electrical accessories separately mounted in a sub-chamber leading from the housing unit and sealed.

11. A heating unit for being detachably mounted in an open wall of a baby incubator comprising a plurality of sections hollowed on their adjacent sides and provided with mating surrounding flanges for being connected to form a chambered housing, a heating element surrounded by a spaced-apart heat dissipating wall attached to one of the housing sections, an electrical power cable attached to one of the housing sections by means of a fitting mounted thereon, and wiring means confined within the housing chamber for electrically connecting said heater and the power cable, said wiring, heating element, and the end of the power cable to which the heating element is connected being sealed by the housing sections within said housing to prevent explosion therefrom in the outside surrounding atmosphere.

12. The heating unit of claim 11 in which the surrounding heat dissipating wall is so proportioned in heat dissipating capacity to the heating power of the heating element that said wall is not heated in excess of the critical temperature.

13. The heating element of claim 12 in which there is included a power pilot light and a thermoswitch mounted on the housing unit and wired to said power cable, all of said elements also being sealed to prevent explosion therefrom in outside surrounding atmosphere.

14. The heating unit of claim 13 in which the sur-

rounding dissipating wall is of uniform structure to dissipate the heat uniformly therefrom.

15. The heating unit of claim 14 in which the heat dissipating wall surrounding the heating element is hermetically sealed to insulate the heating element therein from the surrounding atmosphere.

16. An explosion-proof heating unit for baby incubators comprising a housing of substantially duplicate tightly fitting sections, enclosing a main chamber, carrying an electrical heating element and an electrical power cable, electrical wiring confined within the main chamber for connecting the power cable to the heating element, a sub-housing enclosing a sub-chamber for supporting the heating element in said sub-chamber with its terminal ends projecting in the main chamber, and means for hermetically sealing that portion of the heating element which is within the sub-chamber.

17. An explosion-proof heating unit for baby incubators comprising a sectional housing, enclosing a main chamber, carrying an electrical element on one section and an electrical power cable on another section, electrical wiring confined within the main chamber for connecting the power cable to the heating element, a sub-housing enclosing a sub-chamber for supporting the heating element in said sub-chamber spaced from the sub-housing with the terminal ends of the heating element projecting in the main chamber, and means for hermetically sealing the sub-chamber to exclude the surrounding atmosphere and cause uniform heating of the surrounding sub-housing.

18. An explosion-proof heating unit for baby incubators comprising a housing, enclosing a main chamber carrying an electrical heating element and an electrical power cable, electrical wiring confined within the main chamber for connecting the power cable to the heating element, a sub-housing enclosing a sub-chamber in which a heating element is supported with its terminal ends projecting in the main chamber, said sub-housing being insulated from the heating element and having a wall surface area adapted to be heated throughout to a uniform temperature, and means for hermetically sealing that portion of the heating element which is within the sub-chamber from the main chamber.

19. An explosion-proof heating unit for baby incubators comprising a chambered housing of tightly fitting mating sections carrying a heating element and an electrical power cable, electrical wiring confined within the housing chamber for the heating element and the electrical power cable, a portion of the heating element extending from the housing chamber being of substantial length for distributing the heat over a wide surface area remote from and unconfined by the chamber housing, a protecting covering surrounding the heat distributing portion of the heating element, and means for hermetically sealing the heating element in the protective covering.

20. An explosion-proof heating unit for baby incubators comprising a chamber housing carrying a heating element, an electrical power cable, a power pilot light, a heater pilot light and a thermoswitch, all of which are connected by electrical wiring confined within the housing chamber, a portion of the heating element comprising a resistance wire projecting a substantial length extending from the chamber and housing and unconfined thereby for distributing the heat, a protecting covering surrounding the resistance portion of the heating element, and means for hermetically sealing the heating element in the protective covering.

21. An explosion-proof electric heating unit comprising a plurality of tightly fitting sections having a chamber formed therebetween and securely fastened together, an electrical heating means mounted on the unit including a resistance wire which is embedded within insulating material and enclosed in a metal jacket, a power cable having one end enclosed within an insulating sleeve and clamped to a fitting mounted on one of the sections of the unit, electric wiring connections for the power cable and the resistance wire confined within the chamber of the unit, and means for positively securing the parts mounted on the housing so that they will not be displaced by any explosion resulting in the chamber of the heating unit.

22. A baby incubator comprising the combination of a cabinet having a chamber divided into heating and treating compartments and a heating unit detachably

connected to the heating compartment, said heating unit comprising a plurality of tightly fitting sections enclosing a cup-shaped chamber therebetween, an electric resistance wire mounted upon one of the unit sections, a power cable attached to a fitting mounted upon another of the unit sections, and electric connections for the power cable and the resistance wire confined within the spark-confining chamber of the heating unit.

23. A baby incubator comprising the combination of a cabinet having a chamber divided into heating and treating compartments and a heating unit detachably connected to the heating compartment by means of a side wall for said heating compartment provided with an aperture therethrough, said heating unit comprising a plurality of sections enclosing a chamber therebetween, a marginal flange on each of the sections having an abutting mating face portion, one of said flanges having a face portion for seating against the apertured side wall of the heating compartment, an electric resistance wire mounted upon one of the unit sections, a power cable attached to another of the unit sections, electric connections for the power cable and the resistance wire confined within the chamber of the heating unit, and a front panel plate fitted to the heating compartment, said heating unit being sufficiently sealed by the mated face portions of the sections thereof to prevent any gases within its chamber being transmitted exteriorly thereof to the surrounding atmosphere.

24. A baby incubator comprising the combination as set forth in claim 23 in which the electric resistance wire is enclosed within a metal jacket and is surrounded by an heat radiating tubing.

25. A baby incubator comprising a combination as set forth in claim 24 in which insulating material is contained within the metal jacket for embedding the electric resistance wire.

26. A baby incubator comprising the combination as

set forth in claim 25 in which the surrounding heat radiating tubing is substantially out of contact with the metal jacket.

27. A baby incubator comprising the combination of a cabinet having a chamber divided into heating and treating compartments and a heating unit detachably connected to the heating compartment, having an apertured side wall for connecting a heating unit thereto, said heating unit comprising a plurality of sections enclosing a chamber and provided with marginal flanges, each having a mating abutting face portion, by means of which the sections are adapted to be secured together, one of said flanges having a face portion for seating against the apertured side wall of the heating compartment, securely fastened together, a thermoswitch, a power cable and a heating means positively connected to the sections, electrically wired by wiring means confined within the chamber of the heating unit, and a front panel plate fitted to the heating compartment, said heating unit being sufficiently sealed by the mated face portions of the sections thereof to prevent ignition of any gases within its chamber being transmitted exteriorly thereof to the surrounding atmosphere.

28. A baby incubator comprising the combination as set forth in claim 27 in which the power cable is grounded to the heating unit and the incubator within the chamber thereof.

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