

June 9, 1953

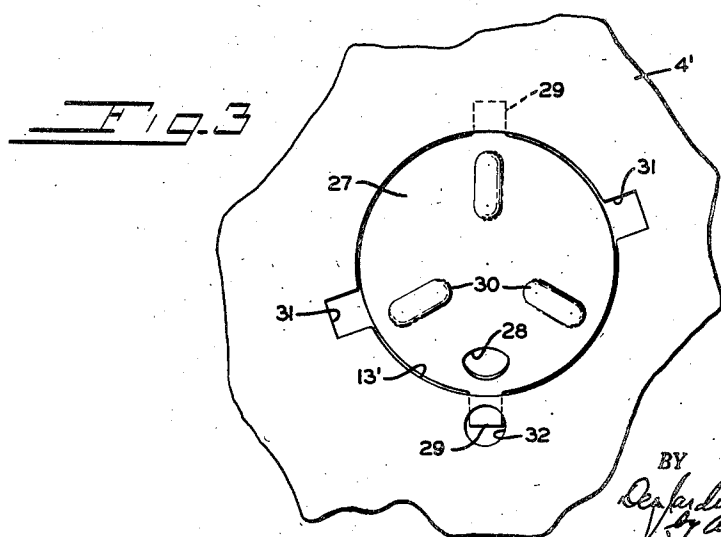
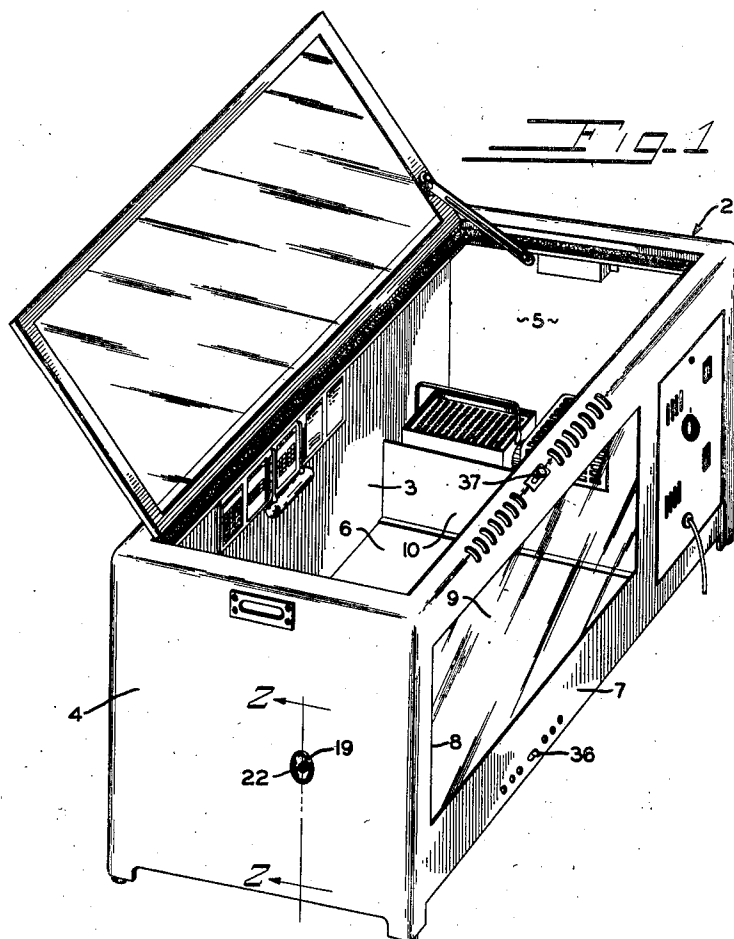
G. ARMSTRONG

2,641,248

PORTABLE BABY INCUBATOR

Filed July 12, 1950

2 Sheets-Sheet 1



INVENTOR.
GORDON ARMSTRONG

BY

Sepherdina Robinson and Kesson
by Albert S. Robinson
HIS ATTORNEYS

June 9, 1953

G. ARMSTRONG
PORTABLE BABY INCUBATOR

2,641,248

Filed July 12, 1950

2 Sheets-Sheet 2

Fig. 2

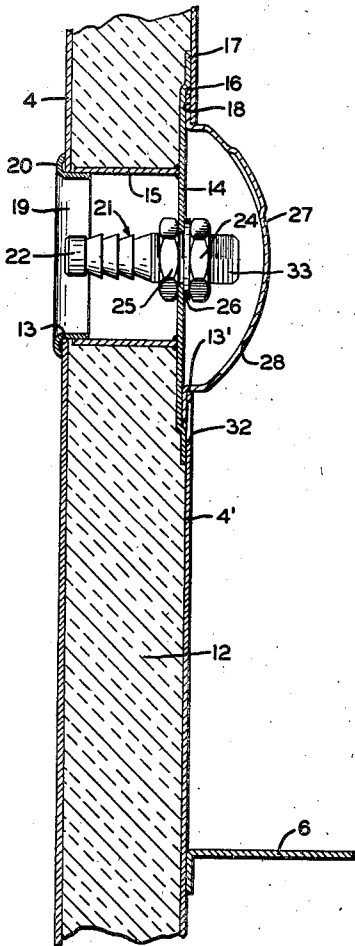


Fig. 4

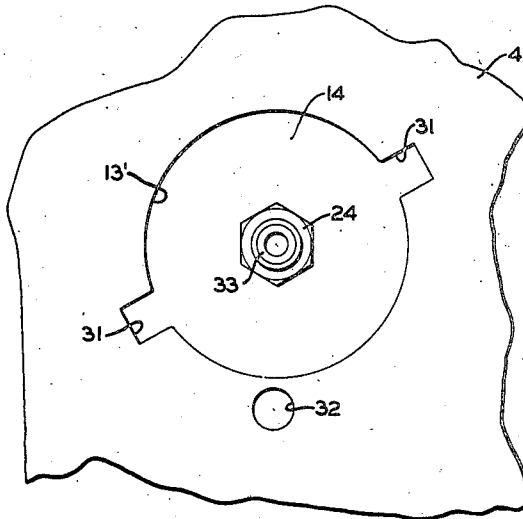
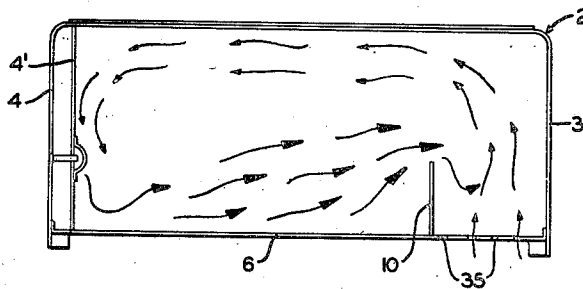


Fig. 5



INVENTOR.
GORDON ARMSTRONG

BY

Dee Gardin, Robinson and Keson
for Robert R. Robinson
HIS ATTORNEYS

UNITED STATES PATENT OFFICE

2,641,248

PORTABLE BABY INCUBATOR

Gordon Armstrong, Cleveland, Ohio, assignor to
The Gordon Armstrong Company, Inc., Cleve-
land, Ohio, a corporation of Ohio

Application July 12, 1950, Serial No. 173,467

8 Claims. (Cl. 128—1)

1

This invention relates to portable baby incubators, and has to do, more particularly, with improvements in the means for feeding oxygen to a treating compartment within the incubator and its circulation therein. This invention is an improvement on my United States patent, No. 2,417,962, issued March 25, 1947, for Portable Baby Incubator.

In the incubator shown in said patent, the oxygen is admitted through an uninsulated end wall near the top of the incubator, and a considerable time is required to obtain the desired high oxygen content of the atmosphere within the treating compartment of the incubator.

The main object of my present invention is to provide an improved incubator construction of such nature that the desired uniform high oxygen content may be attained more rapidly with the same rate of flow from the oxygen container to the incubator.

Another object of the invention is to provide an improved baffle means for readily controlling the direction of flow of the oxygen into the incubator.

Still another object of the invention is to provide an improved baffle which is readily attachable to and detachable from the incubator, so that it may be used or not as desired.

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 an end wall taken on line 2—2 of Fig. 1.

Fig. 3 is a view in elevation of the inner side end wall in which the oxygen inlet and baffle are mounted.

Fig. 4 is a view similar to Fig. 3 but with the baffle removed so that the end of a conduit to an oxygen mask may be fitted to the end of the oxygen inlet.

Fig. 5 is a diagrammatic view of the interior of the incubator showing by arrows the circulation of air and oxygen therein.

In general my present invention comprises a portable baby incubator of box-like form having

2

a chamber divided into a heating compartment and a treating compartment by a partition which extends upwardly from the bottom to about one-half the height of the incubator to terminate below a cover that is pivotally connected for opening and closing the incubator.

The incubator is of conventional construction except for the particular location of the oxygen inlet, the baffle means associated therewith, and the end wall of the incubator on which the oxygen inlet and baffle means are mounted.

The inlet feed nozzle of the oxygen supply is placed near the bottom of the incubator, at least below the horizontal median of the chamber, and preferably nearer the front wall, for obtaining a much higher concentration of the oxygen with the air in the treating chamber than would be obtained, in the same length of time, with the oxygen inlet disposed above the horizontal median of the treating compartment. With a flow of about four (4) liters of oxygen per minute, about sixty-eight (68) percent concentration of oxygen can be obtained within a period of twenty (20) minutes as compared with about fifty-nine (59) percent concentration in the same time period with the oxygen inlet disposed above the horizontal median of the chamber or adjacent the top wall thereof. The shield or baffle is detachably fitted over the inlet end of the nozzle and has an opening formed therein which is eccentrically disposed for directing the discharge of oxygen in any selected radial direction as the baffle or shield is rotated. The shield or baffle can be removed to permit the end of a conduit from an oxygen mask being fitted directly over the end of the nozzle of the oxygen inlet.

Referring specifically to the drawings in which like numerals are used to designate like parts, numeral 2 is a rectangular box-like cabinet, formed mainly from metal stamping, having a back wall 3, end walls 4 and 5, bottom wall 6 and front wall 7. The front wall 7 has an opening 8 therein which is closed by a transparent panel 9 that is substantially coextensive with the length and height of the treating compartment. The treating compartment is separated from the heating and humidifying compartment by a transverse partition wall 10 extended between the front and back walls, said partition wall being about one-half the height of the chamber.

For a more detailed construction of the incubator generally, reference is made to my above patent, No. 2,417,962 which is incorporated as a part of the disclosure in the instant application

3

that is an improvement over the incubator construction disclosed in said patent. The detailed description here is confined to those parts of the incubator which differ in construction from that disclosed in my earlier patent. A front panel 5 plate is secured by a screw to close the opening of the heating compartment in which a thermostatic switch and heating unit is contained. A water receptacle with a bail is supported within the heating compartment also. All of this is shown in my above patent and is only generally described here.

The end wall 4 of the incubator which is remote from the heating compartment is made double by a supplemental end wall 4' parallel to and spaced from the end wall 4 to provide a space therebetween for being filled with insulating material 12, such as mineral wool, asbestos or the like.

Both end walls 4 and 4' are recessed at 13 and 13', and a plate 14, with a cylindrical tube 15 secured to one side, is mounted between these walls in alignment with the recesses. The plate is dished to provide an offset 16 between its main central body portion and the peripheral lip 17. The diameter of this plate 14 is substantially greater than the diameter of the recess 13' in wall 4' so that an annular socket 18 is formed between the main body of the plate and the margin of wall 4' surrounding the recess 13'. The lip 17 on the plate seats against the margin of the wall 4' surrounding the recess and is spot welded thereto. One end of the tube 15 is welded to the plate to be concentric with the openings 13 and 13', and its opposite end has the neck of the grommet 19 telescoped therein and welded thereto with the portion 20 of the grommet flared for its flared end to abut against the margin of the recess 13 in wall 4.

An oxygen inlet discharge nozzle 21 having a tube receiving end 22 is fitted within a recess in the plate 14 and clamped therein by a clamp-nut that is screw-threaded on the nozzle adjacent to another nut 25. The plate 14 is a support for the nozzle 21 mounted thereon. A gasket 26 is interposed between clamp-nut 24 and the plate 14 in order to insure a tight fitting connection for the nozzle on the plate. The nozzle has a longitudinal bore therethrough for communicating with the bore of the conduit from the oxygen supply tank, one end of the conduit being fitted to the nozzle.

A baffle or shield 27 covers the inlet discharge end of the nozzle and is rotatably mounted on the wall 4'. The main body of the shield is cup-shaped with a perforation 28 formed therein eccentric to or offset from the longitudinal axis of the nozzle to be disposed in any radial direction by turning the shield or baffle within the annular socket. The rim or edge of the shield has a pair of oppositely disposed lugs 29 extending therefrom, these lugs being adapted to fit within the annular socket 18 that is formed between the plate and the wall 4'. The baffle or shield can be rotated within the annular socket so that the oxygen which is fed through the nozzle from a conduit, connected to a supply source, can be discharged into the chamber in any desired radial direction by selectively positioning the perforation 28. One or more embossments 30 are stamped from the shield 27 to facilitate it being manually turned within the socket.

Oppositely disposed cutouts 31 are provided in the wall 4' in from the edge of the recess 13', these cutouts being of the general conformation

4

of the lugs on the shield but sufficiently large to permit clearance of them for passing there-through to permit said shield being readily attached to and detached from the wall when the lugs on the shield are in registration with the cutouts 31 in the wall. When the lugs are not in registration with the cutouts, the shield is, of course, positively interconnected within the socket to the incubator wall.

A perforation 32 is formed at the bottom of the annular socket through the wall 4' for allowing escape of any water of condensation that might form in the bottom of the socket. In order that this perforation 32 will at all times remain open, at least a portion of it should extend below the orbital path in which the lugs on the shield move so that if one of the lugs is at any time in alignment with this perforation, the perforation will not be entirely closed but will be partially uncovered.

The discharge end of the oxygen inlet discharge nozzle and is provided with a nose adaptor 33 for permitting the end of a conduit, such as a hose, from an oxygen mask being fitted thereto in instances where it is desired to remove the shield and connect an oxygen mask to the discharge end of the nozzle.

An air control damper with perforations 35 is provided in the bottom of the heating compartment and controlled by an indicator 35 at the bottom of the front wall 1. Another air control damper 37 is provided at the top of the front wall. Air is drawn into the chamber of the incubator through perforations 35 formed in the bottom wall of the heating compartment. The insulated wall and the location of the oxygen inlet therethrough cause the oxygen and air to circulate along the bottom of the treating chamber and provide a higher concentration therein near the bottom of said chamber. The air as drawn into the incubator through the perforations in the bottom of the heating chamber passes up through the heating chamber and along the top of the treating chamber where it comes into contact with the insulated wall which causes it and the oxygen fed in from the oxygen inlet to be circulated along the bottom of the treating chamber toward the heating chamber and then upwardly. The air is indicated by smaller arrow heads than is the oxygen and air mixture of higher oxygen concentration, indicated by larger arrow heads, which circulates from the insulated wall toward the heating chamber.

From the foregoing description, the operation and use of the incubator is apparent. The oxygen inlet is provided near the bottom wall of the treating chamber, and preferably near the front side wall, to obtain, within the same period of time, a higher concentration of the oxygen in the treating chamber than when it is fed to the top of the treating compartment. The insulated end wall, remote from the heating compartment, causes the oxygen to be circulated along the area immediately above the bottom wall toward the heating chamber through the treating chamber where it is mixed with air admitted to the incubator through the perforations in the bottom wall of the heating chamber. The insulated wall with the oxygen inlet therethrough below the horizontal median of the treating chamber causes a circulation to be set up in the bottom of the treating chamber in which the baby is placed to accelerate the concentration of the oxygen with the air in this critical area. By means of the shield having an offset opening therein, the oxygen can

5

be directed in any radial direction by turning the shield to position the opening in the desired radial direction. The shield is readily detachably connected to the end of the incubator so that it can be easily removed, if desired, to permit the end of a conduit from an oxygen mask being attached directly to the oxygen inlet nozzle.

I am aware that there may be various changes in details of construction without departing from the spirit of my invention, and, therefore, I claim my invention broadly as indicated by the appended claims.

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

1. A baby incubator comprising the combination of a box-like housing having a bottom wall and surrounding top and bottom side walls providing a baby treating compartment, a closure lid fitted to one of the surrounding walls, an oxygen inlet nozzle leading through an opening in one of the walls, a plate spanning the opening and having the nozzle mounted thereon, and baffle means for controlling the radial direction for the discharge of the oxygen from said inlet nozzle to the treating chamber, said baffle being revolvably mounted on the wall of the incubator and provided with an eccentrically disposed perforation for selectively directing the oxygen in any radial direction.

2. A baby incubator as set forth in claim 1 in which the baffle is cup-shaped and is fitted to the wall of the incubator and covers the inlet discharge end of the nozzle.

3. A baby incubator as set forth in claim 1 in which the baffle is readily attachable to and detachable from the wall of the incubator.

4. A baby incubator as set forth in claim 1 including a hose adaptor provided on the discharge end of the oxygen inlet nozzle.

6

5. A baby incubator as set forth in claim 1 in which the incubator wall and the support plate for the nozzle provide a socket in which the baffle means is rotatably mounted.

6. A baby incubator as set forth in claim 5 in which a drain opening is provided in the bottom of the socket.

7. A baby incubator comprising the combination of a box-like housing having a bottom wall and surrounding top and side walls providing a baby treating compartment, a closure for the housing, an oxygen inlet into the baby treating compartment through an opening provided in one of the side walls at a point which is nearer to the bottom wall than it is to the top wall of the housing for expediting a concentration of oxygen with air in said treating compartment, a plate spanning said opening provided in the side wall on which said oxygen inlet is mounted, and a readily rotatably adjustable baffle means mounted on said side wall for controlling the radial direction for the discharge of the oxygen from said inlet to the treating chamber.

8. A baby incubator as set forth in claim 7 in which that side wall having the oxygen inlet therethrough is insulated and the opposite wall is non-insulated.

GORDON ARMSTRONG.

References Cited in the file of this patent
UNITED STATES PATENTS

Number	Name	Date
1,933,733	Hess	Nov. 7, 1933
2,314,850	Woelfel	Mar. 23, 1943
2,353,536	Abbott	July 11, 1944
2,417,962	Armstrong	Mar. 25, 1947
2,470,721	Progel	May 17, 1949
2,508,050	Valente	May 16, 1950