

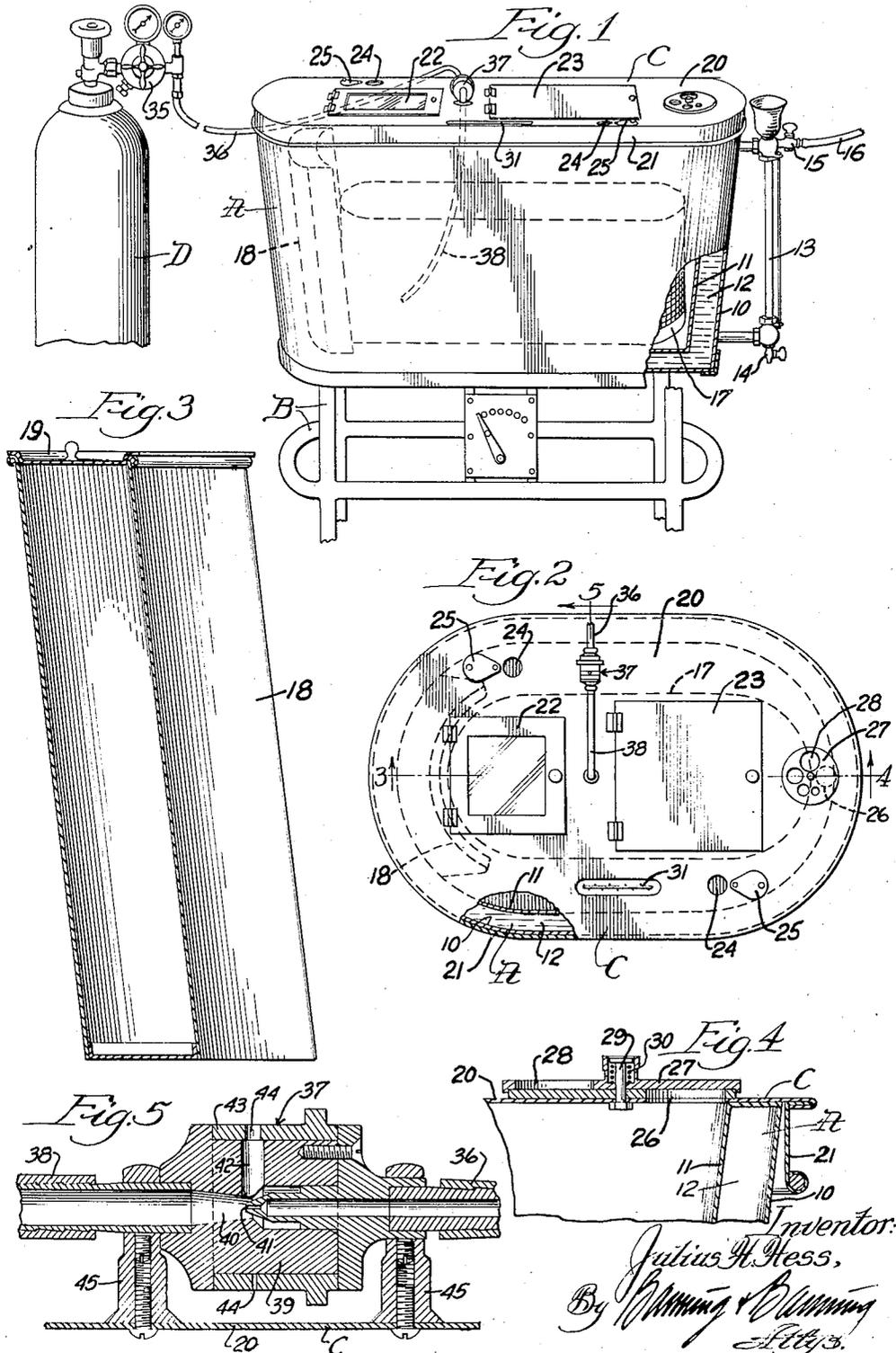
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INFANT INCUBATOR

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Att'y.

# UNITED STATES PATENT OFFICE

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## INFANT INCUBATOR

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2 Claims. (Cl. 128—1)

This invention which relates to an infant incubator is concerned with a bed having an enclosure forming a chamber wherein the oxygen content and humidity may be easily and accurately controlled. The bed is intended primarily for the treatment of infants that are premature, undernourished, or affected with pneumonia or other ailments.

It is an object of the invention to provide, in connection with a suitable bed, a cover having conditioning openings through which to circulate oxygen and air, and other service and observation doors disposed to best advantage in relation both to the conditioning openings and to the treated patient; and a further object is the provision of a container for ice or other refrigerant insertible within the chamber for affecting the temperature and humidity therein.

As an exemplification of my invention reference is made to the accompanying drawing in which—

Figure 1 is a perspective view of the present incubator together with a partial showing of an oxygen tank connected thereto;

Fig. 2 is a plan view of the incubator;

Fig. 3 is an enlarged view in cross section of the ice container;

Fig. 4 is an enlarged detail view of the air inlet valve, the section being taken on line 4 of Fig. 2; and

Fig. 5 is an enlarged detail view in section of the oxygen control valve, the section being taken on line 5 of Fig. 2.

In the disclosed construction, an incubator A of generally elliptical form is supported upon a stand or pedestal B which, if desired, may be provided with rollers (not shown) to facilitate mobility. The incubator constitutes a bed having surrounding inner and outer walls 10 and 11, respectively, provided therebetween a space 12 for water, either for heating or cooling purposes. With such a jacketed construction I associate a water gauge 13 having a drain cock 14 and an inlet cock 15, the latter being provided with a suitable connection with a tube 16 which, if desired, may be connected to a hydrant for circulating water around the bed in the event that a reduced temperature is desired.

Removably fitted within the incubator is a basket 17 in which the infant may be placed. The basket is desirably slightly shorter in length than the interior of the bed to allow space at either end for the insertion of an ice container 18 shaped in general conformity with the proximate walls of the bed. A cover 19 may be placed

over the container wherein ice will serve to cool the temperature within the bed.

A substantially flat elliptical cover C of sheet metal 20 from which depends a skirt 21 is adapted to fit removably over the top of the bed. In the cover are two relatively large openings in line with its major axis and to opposite sides of its minor axis, these openings being provided with hinged doors 22 and 23. The former of these doors which is positioned about opposite the head of an infant lying within the bed is equipped with a glass window for observation. The other door, slightly larger than the first, is located conveniently for service purposes.

The cover is provided also with other smaller openings 24 having adjustable pivoted lids 25. Through these openings which desirably are located at spaced points adjacent opposite sides of the two doors an instrument may be inserted for testing the oxygen content within the bed; when not so used, they serve as vents depending upon the extent to which these lids are opened. A further opening 26 is also provided in the cover at its end opposite the head door 22; over the opening is a rotatable disk 27 having openings 28 of varying sizes adapted successively to register with the cover opening whereby to provide a vent of desired area. The disk which is pivoted about a bolt 29 may be pressed by a spring 30 against a boss upstanding from the cover so as to obviate any loose fitting thereupon. A thermometer 31 attached to the cover registers the temperature within the incubator.

I propose to supply oxygen to the incubator in predetermined quantities, depending upon the age, size or condition of the infant under treatment. For this purpose, I utilize an oxygen tank D to which is attached a pressure regulator 35 for controlling the pressure of the oxygen from the tank to a tube 36 which leads to a mixing valve shown generally at 37. From this valve is extended a flexible delivery tube 38 which terminates within the bed at a point near the head of the contained infant.

The mixing valve may comprise a body 39 having a central bore 40 in which is located a jet 41 for the supply of oxygen. A radial opening 42 extends outwardly from the bore adjacent the jet. Surrounding the body is a rotatable collar 43 having a plurality of openings 44 which vary in size, these several openings being located in the same transverse plane with the opening 42. The collar may accordingly be rotated so as to bring a selected opening 44 into register with the opening 42, thus establishing a desired mix-

ture of air and oxygen. As shown, the valve is mounted upon posts 45 upstanding from the cover.

5 It has been found by experience that the present incubator is adapted for the treatment of babies which are premature to those of one year or older. This is due in part to the provision of the mixing valve and adjustable vents which afford excellent control over the conditions within  
10 the incubator. By placing coarse salt in the ice container, the temperature is reduced to a lower point than otherwise, but any such expedient, or indeed any use of the ice container at all, is entirely optional.

15 By the control means provided, and their relation to each other and to the incubator as a whole, it is possible to maintain a desired temperature and humidity within the bed. In particular, it is desirable to utilize a flexible tube  
20 through which oxygen and air is delivered at a point close to the head of the patient, the exact position of this tube being adjustable at will. The venting of air partially vitiated is accomplished at the end of the bed opposite the oxygen  
25 intake.

I claim:

1. In an infant incubator comprising a substantially elliptical open top chamber forming a bed, a cover having a skirt adapted to fit over  
30 the open top of the chamber forming a closure for the bed, there being openings in the cover

in line with the major axis of the bed, one windowed for observation at a point about opposite the head of the bed, a regulable mixing valve, having connection with a source of oxygen, carried by the cover, a flexible delivery tube extending from the mixing valve through the cover to a point which is normally at the head of the bed, and a regulable vent carried by the cover at a point remote from the head of the bed.

2. In an infant incubator comprising a chamber of generally elliptical shape forming a bed open at the top, a cover adapted to be positioned over the open top of the chamber to provide a closure therefor, observation and service doors carried by the cover in line with its major axis each adapted when open to afford access to the interior of the chamber, means providing adjustable vent openings through the cover on opposite sides of the major and minor axes thereof, a mixing valve, having connection with an oxygen source, carried by the cover between the doors thereof, the valve including a rotatable collar formed with graduated openings adapted successively to be moved into register with a port which extends radially inwardly from the collar to admit air into combination with oxygen received from the supply source, and a flexible delivery tube extending through the cover from the mixing valve to a point which is normally adjacent the head of the bed.

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