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INCLOSED BED FOR PREMATURE AND FEEBLE INFANTS

Filed July 17, 1924

4 Sheets-Sheet 2

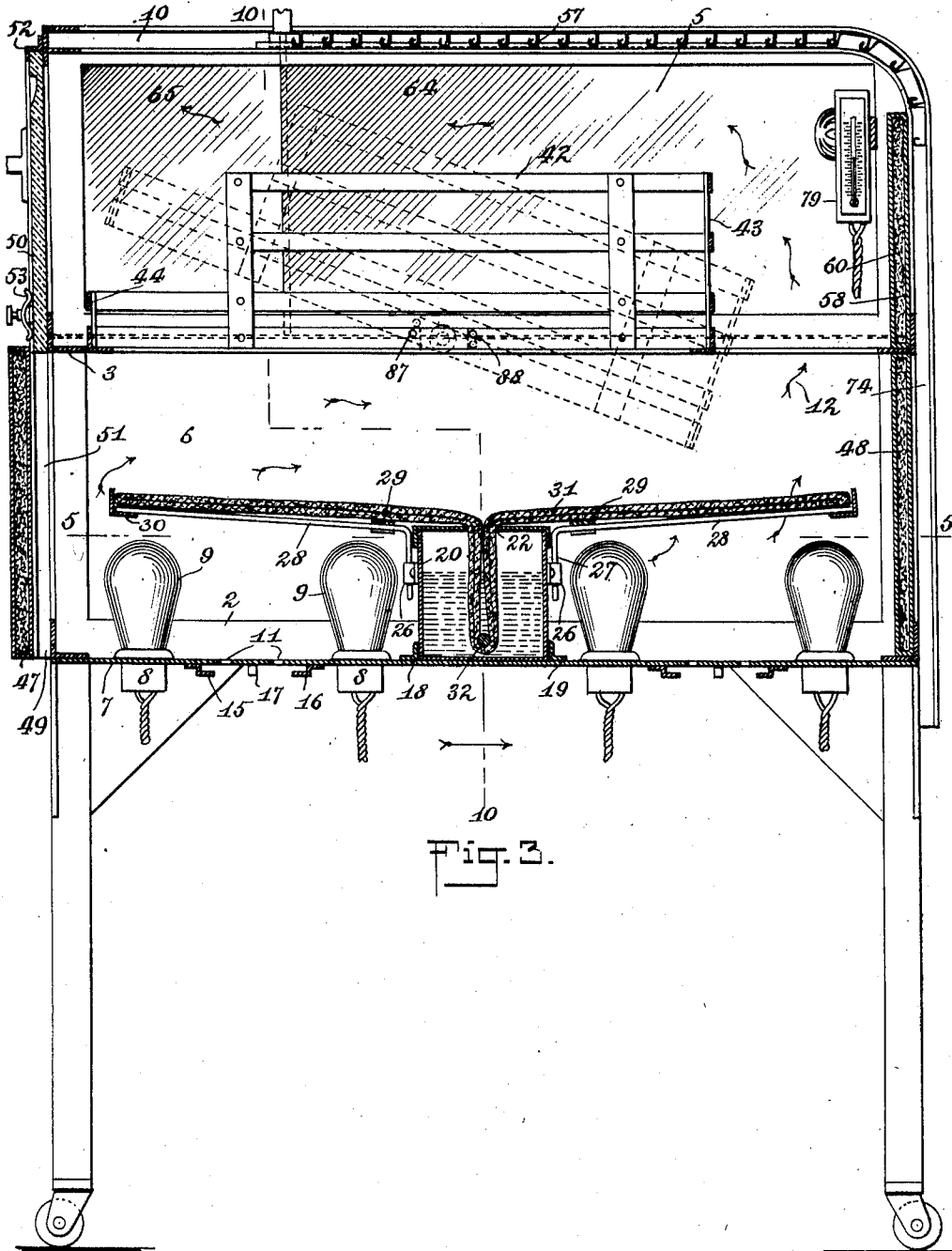


Fig. 3.

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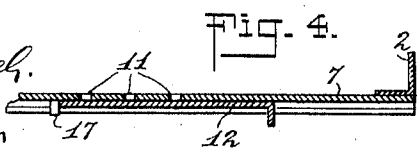


Fig. 4.

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Fig. 5.

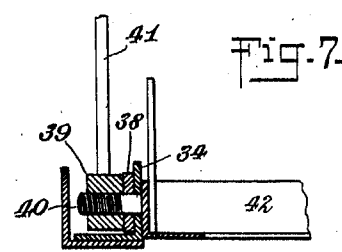
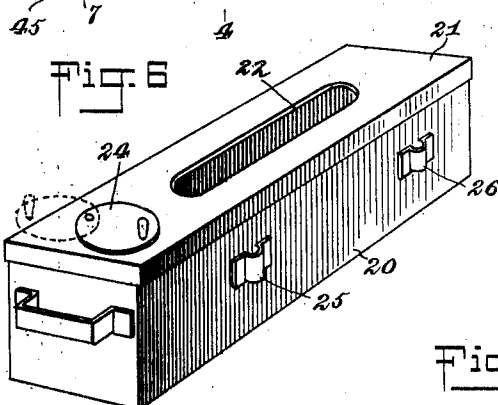
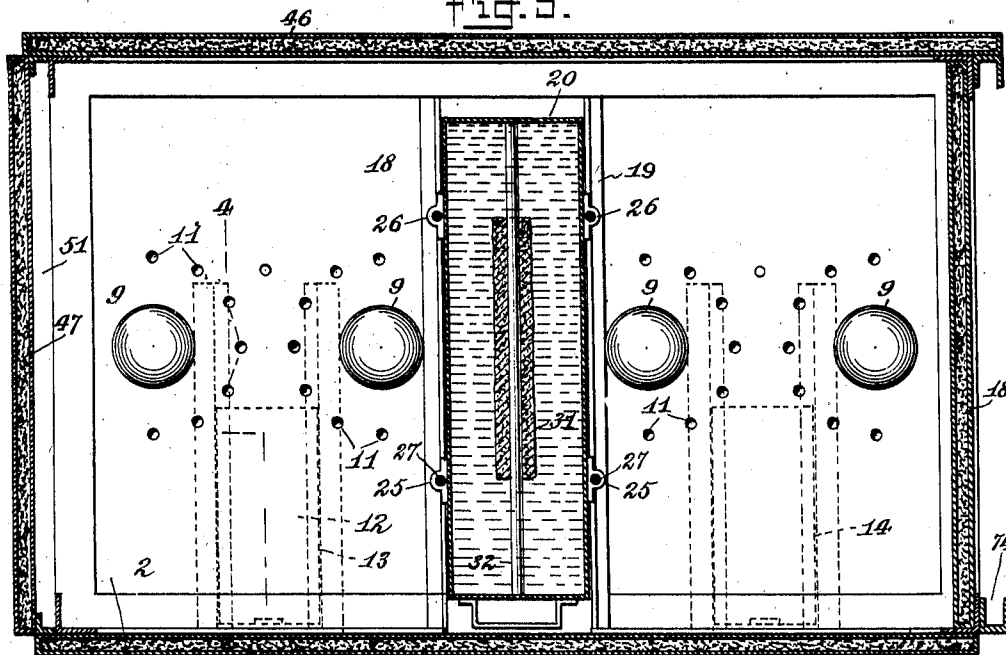
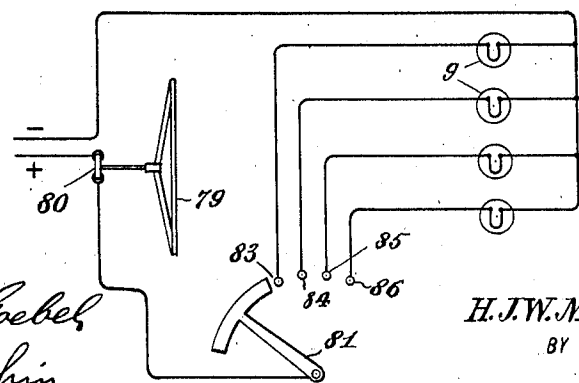


Fig. 8.



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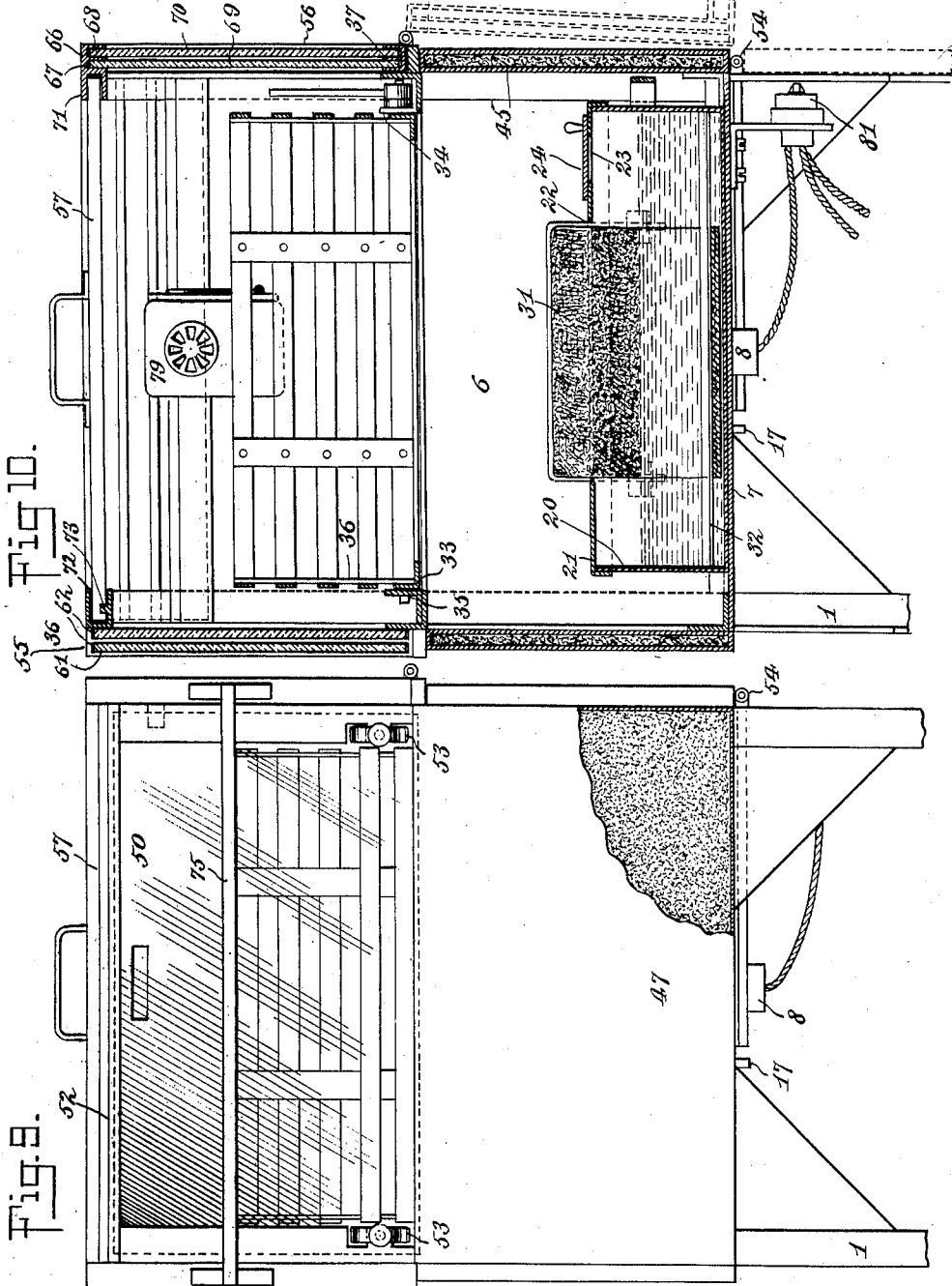


FIG. 10.

FIG. 9.

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INCLOSED BED FOR PREMATURE AND FEEBLE INFANTS.

Application filed July 17, 1924. Serial No 726,618.

This invention relates to beds for the care of infants and particularly to beds so formed as to properly accommodate premature and feeble infants until such time as they have developed sufficient strength to be taken care of in an ordinary bed.

An object of the invention is to provide a bed which is adapted to receive an infant or small child and to maintain the temperature and humidity substantially uniform, notwithstanding the changing of temperature adjacent the bed.

Another object of the invention is to provide a bed wherein an ample supply of moisture laden air is provided for the patient.

A further object of the invention is to provide a bed particularly for very small and feeble infants wherein a tilting structure is provided for receiving the infant and a surrounding protecting wall structure is provided with suitable co-acting devices to provide a proper circulation of air and moisture for the air so that the infant may be maintained in substantially any desired position and provided with properly moistened air.

A still further object of the invention, is to provide a bed for babies which is formed with enclosing walls constructed to be opened slightly or to a very great extent whereby the baby may be almost enclosed or almost completely unenclosed.

In the accompanying drawings—

Figure 1 is a perspective view of a bed disclosing an embodiment of the invention.

Figure 2 is a fragmentary sectional view of one end of the bed shown in Figure 1, the same illustrating an adjustable structure acting as a screen.

Figure 3 is a longitudinal vertical sectional view through the structure shown in Figure 1, the same being on an enlarged scale.

Figure 4 is a fragmentary sectional view through Figure 5, approximately on line 4—4.

Figure 5 is a horizontal sectional view through Figure 3, approximately on line 5—5.

Figure 6 is a perspective view of the water container shown in Figure 5.

Figure 7 is an enlarged detail fragmentary sectional view through Figure 5, approximately on line 7—7.

Figure 8 is a diagram of the wiring for the lamp shown in Figure 3.

Figure 9 is an end view of the structure

shown in Figure 1, the same being on a somewhat enlarged scale.

Figure 10 is a sectional view through Figure 3, approximately on line 10—10.

Referring to the accompanying drawings by numerals, 1 indicates a frame which includes four legs as shown in Figure 1 preferably provided with casters so that the bed may be readily moved. The frame also includes a substantially rectangular structure 2 as shown in Figure 5 and an intermediate rectangular structure 3, the same being connected by the vertical angle brace 4, which angle brace merges into the legs. This part of the structure may be of any desired kind as long as means are provided for presenting an upper chamber 5 and a lower chamber 6. The rectangular structure 2 is provided with a bottom 7 which may be riveted or otherwise secured thereto, said bottom being of any desired material, as for instance, sheet metal. A plurality of lamp sockets 8 are carried by the bottom 7, there being shown in the accompanying drawings four, though a greater or even less number might be used if desired.

In each of the sockets 8 there is provided a lamp 9 whereby when current is turned on heat is provided for the chamber 6, said heat passing upward into chamber 5 and finally out the opening 10 at the top. The bottom 7 is also provided with a plurality of apertures 11, there being a number spaced from and partially surrounding each of the sockets 8. This permits air to pass upwardly into the heated chamber 6 and become also heated so that it will pass upwardly as indicated by the various arrows 12.

In order to regulate the volume of air, slides 13 and 14 are provided as illustrated in Figures 4 and 5. Each of these slides is positioned in suitable runways 15 and 16, there being a stop 17 for limiting the inward movement of the slide. As indicated in Figure 5, each slide is adapted to cover six apertures so that both slides cover twelve apertures and leave sixteen apertures uncovered, thus shutting off approximately half of the volume of air. It will be understood that more or less apertures might be covered and also that the apertures may be of any desired size. However, by providing this shutter arrangement, the volume of air may be adjusted while it is impossible to completely shut off all of the air from the occupant of the bed. The bottom 7 also carries a pair of guides or stops

18 and 19, between which is removably positioned a tank or container 20 as shown particularly in Figures 3, 5 and 6. This tank is preferably rectangular and is provided with a lid 21 having a slot 22 and a filling opening 23 normally covered by the lid 24. Brackets 25 and 26 are arranged on each side of the container for receiving the downward extending sections 27 of the respective supporting or bracing rods 28. The rods 28, together with the transverse plates or strips 29 and 30, form supporting grids on opposite sides of the container 20 as shown in Figure 3 whereby the absorbing member 31 may be properly supported. This absorbing member may be of any desired material, as for instance, an ordinary Turkish towel folded upon itself with a section extending downwardly through the slot 22 into the tank or container 20. A rod 32 is arranged near the bottom of the container 20 whereby the depending section of the absorbing member 31 is always held in position for receiving moisture whenever there is any water in the container. Preferably a lateral supply of water is maintained in the container 20 and suitable quantities thereof will pass upwardly by capillary attraction until the entire absorbing member 31 is saturated.

Whenever one or more of the lamps 9 are operating, a certain amount of heat will be provided and as the air passes upwardly through the apertures 11, it will be heated and as it strikes the absorbing member 31 will become more or less saturated with moisture or rather will be provided with a desired quantity of moisture so that when the air enters the chamber 5 it will be in proper condition for breathing by the infant. If this moisture was not provided but the air heated, the air would become something on the order of a sponge and would not only heat the infant but would absorb some of the moisture therefrom and in this way produce a loss of weight which would be very undesirable for feeble infants or premature babies. In case too much moisture was provided, the absorbing material 31 could be readily reduced and yet left in the path of movement of the air so that the desired moisture might be provided.

Mounted centrally on the structure 30, are brackets 33 and 34 as shown in Figure 10, bracket 33 accommodating a pin 35 rigidly secured to the tilting crib 36 while a pin 37 is journaled in bracket 34. The pin 37 as shown more particularly in Figure 7, extends loosely through a suitable aperture in the bracket 34 but is provided with a washer 38 and a nut 39 screwed onto the threaded section 40. A suitable handle 41 is connected with the nut 39 whereby when the position of the crib 36 is determined, nut 39 will be tightened and the crib locked in the desired position, as for instance, the position shown

in Figure 3 or that shown in Figure 1. The crib 36 may be made from any desired material, as for instance, a number of strips 42 of metal riveted together to form an enclosure which is preferably provided at one end with vertical closing strips 43 and at the other end left open but with a forwardly extending section 44, which forwardly extending section is merely some of the bottom and side members projecting beyond the remaining side members. If desired, the crib could be made in some other manner, the essential feature being to present an openwork crib structure for receiving the mattress and other bed clothes.

Surrounding the chamber 6 are side members 45 and 46 as well as end members 47 and 48. It will be noted that the end member 48 (Figure 3) is arranged within the angle bars forming the frame while end member 47 is arranged exteriorly thereof and spaced therefrom by suitable angle plates 49 whereby the glass panel 50 may slide downwardly in the space 51 whenever desired. This panel normally is fitted into a suitable frame 52 and forms the end of chamber 5. A pair of springs 53 are provided, the same being carried by frame 52, said springs acting to hold the panel 50 in the position shown in Figure 3 or in a partially or entirely lowered position. In forming the side members 45 and 46, it will be noted that the side member 45 is hinged at 54 so that it may be readily swung downwardly out of the way when access to the lower chamber 6 is desired. When this side member is in its raised position, the same may be held in place by any suitable means, as for instance, a fastening clip.

The chamber 5 is enclosed not only by the panel 50 but by what may be termed side walls 55 and 56 and a roll top structure 57 which acts with the end member 58 to close the end and also the top partially. The end member 58 is constructed similar to the end and side members surrounding the chamber 6, namely, with an enclosure 59 of metal and a filling 60 of asbestos or other desired material. The wall 55 is in effect, a metal frame 61 having slideways 62 and 63 for receiving the respective glass panels 64 and 65, panel 64 being usually cemented or otherwise permanently fixed in place while the panel 65 is slidable so as to provide a side opening for the admission of air whenever desired. The wall 56 is likewise made up from a metal frame 66 having runways 67 and 68 for accommodating the panels 69 and 70, panel 69 being preferably cemented or otherwise rigidly held in place while the panel 70 is slidable. The metal frame 66 is provided with a channel iron extension 71, which when the frame is in operative or elevated position as shown in Figure 10, will fit over the edge of the roll top 57, the opposite edge fitting into a fixed channel frame 72, said channel frame

having an upstanding bead 73 for projecting into a groove in the lower face of the roll top 57 whereby this roll top may freely slide back and forth but cannot move away from the fixed channel frame 72.

When access is desired, as for instance, when cleaning or washing the child, the roll top 57 may be pushed back any desired distance and the end will pass downwardly into the vertical guideways 74. The wall 56 may be then swung downwardly as shown in dotted lines in Figure 10. If desired, the panel 65 could be slid to an open position and panel 50 also lowered, whereupon the child will be exposed almost completely on all sides. All or any one of these structures may be moved back to their former position so that the child will be enclosed to any desired extent.

When the child is first placed in the bed, preferably the only opening is the opening 10 which is permanently provided and which is never closed, a suitable stop being provided to prevent the closing of the roll top 57. As the child becomes stronger and approaches the end of the premature stage, this opening is enlarged by sliding the roll top 57 toward the guides 74. The panels 65 and 70 may be also opened to any desired extent as well as panel 50. In this way, more and more air from the room may be admitted directly into the chamber 5 as the child is able to bear the same until it is practically exposed, as if it were in an ordinary bed or an ordinary crib. At the front of the bed on the frame 52 is provided a bar 75 extending across the front of the bed, said bar being adapted to receive the clamp 76 (Figure 2) which clamp is connected with a flexible support 77 carrying a shield 78 which is preferably metal, said shield acting as a screen to prevent the lights in the room from shining directly on the child's face.

When the bed is in use, the child is arranged preferably in the crib 36 so that its head will be in the forwardly extending portion 44 directly beneath the opening 10. It will be, of course, evident that the mattress or other bedding beneath the child will prevent any of the air passing upwardly to the child. However, the air by reason of the mattress and other bedding will be compelled to pass as indicated by the arrows 12, so that the child will continually breathe heated and moistened air. The various lamps 9 may be turned on and off manually or may be turned on and off by a suitable thermostat 79. As indicated in Figure 8, the thermostat 79 is connected to a suitable switch 80 which it may open and close for breaking or making the circuit of the lamps at any time. The hand switch 81, however, is of a special construction which is actuated independently of the switch 80. As indicated in Figure 8, the switch 81 is provided with a contact 82 for engaging the various

contacts 83, 84, 85 and 86, the arrangement being such that the lamps are successively turned on so that one, two or more lamps may be lighted by a proper adjustment of the switch 81.

When the device is first used, all of the lamps are preferably turned on until the proper heat has been secured, after which, the switch is moved back until only two lamps are used. If the thermostat 79 is in operation, usually the switch 81 is left in position for using all of the lamps and the thermostat then may turn on and off the current to maintain a certain temperature which will automatically cause the air passing the absorbing material 31 to absorb a certain amount of water.

From Figures 1 and 3, it will be noted that the crib 36 is provided with suitable pins 87 and 88, said pins being positioned to strike against the side angle bars making up the structure 3 whereby the crib is limited in its tilting motion so that it cannot tilt beyond the position shown in Figure 1 or the dotted position shown in Figure 3.

What I claim is:

1. An enclosed bed construction for premature and feeble infants, comprising a closure, means for producing a circulation of air through said closure, a bed mounted within the closure, said closure having an adjustable section and means for preventing the complete closure of said section to leave a permanent opening at the head end of said bed.

2. A bed for infants, comprising a closure having adjustable sections capable of being open to different extents for varying the amount of ventilation, a tiltable support arranged substantially centrally of the enclosure, means for locking the support in different positions, and means for heating the air in the enclosure, and means for supplying moisture to said air as it is heated.

3. An enclosed bed construction for premature and feeble infants, comprising an enclosure having ventilating openings for producing a circulation of air through said enclosure, a bed located within the enclosure, and means for supporting the bed for tilting adjustment to raise or lower the head of an occupant of the bed with relation to the feet of the occupant and for holding the bed in adjusted position.

4. An enclosed bed construction for premature and feeble infants, comprising a closure frame, a bed supported within the closure and a series of enclosing walls for said closure, comprising an adjustable section arranged to open from the head toward the foot of said bed, and means for preventing the complete closure of said section to provide a permanent opening at the head end of the bed.

5. A device of the character described com-

prising a casing for housing premature and feeble infants, and a bed mounted within said casing, the casing comprising an adjustable section above the bed and one or more adjustable side wall sections, each arranged, when adjusted in open position, to leave an opening at the head end of said bed and means for preventing the complete closure of one of said sections to provide a permanent opening in the casing.

6. An enclosed bed construction for premature and feeble infants, comprising a casing, a bed mounted in the upper portion of said casing in position to leave a main air passage from the lower to the upper portion of the casing at the foot end of the bed, means providing an opening in the casing at the head end of the bed, a humidifier located in the portion of the casing below the bed and comprising a tank, a wick substantially impervious to the passage of air currents extending from said tank in a horizontal direction below the bed and spaced from the same, and a source of heat located below the wick whereby the heated air below the wick rises into contact with the wick, then is deflected laterally by the wick and passes upwardly through the passage at the foot end of the bed, over the bed, and then outwardly through the opening in the casing at the head end of the bed, part of the heated air passing between the wick and the bed on its way to said passage.

7. An enclosed bed construction for premature and feeble infants, comprising a casing, a bed mounted in the upper portion of the casing in position to provide a main pas-

sage for air currents from the lower to the upper portion of the casing at one point in the casing and to prevent substantially the passage of air currents between the bed and the casing at other points, means providing a ventilating opening in the upper portion of the casing, a humidifier located in the portion of the casing below the bed and comprising a tank, a wick substantially impervious to the passage of air currents extending laterally from the tank below the bed and spaced from the same, and a source of heat below the wick whereby the rising currents of the heated air are deflected laterally by the wick and pass some of the air currents upwardly between the bed and the wick and through said passage into the upper portion of the casing.

8. An enclosed bed construction for premature and feeble infants, comprising in combination an enclosure, a bed mounted in the upper portion of said enclosure, the enclosure having a permanent ventilating outlet adjacent the head of the bed and opening immediately from the inner part of the enclosure to the outer air and also having a permanent ventilating air inlet in the lower portion thereof and wall sections arranged for adjustment to different open positions so that the infant occupying the bed may become gradually accustomed to room temperature and moisture conditions, means for heating the air in the lower portion of the enclosure, and means for humidifying the air as it passes upwardly into the upper portion of the casing.

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