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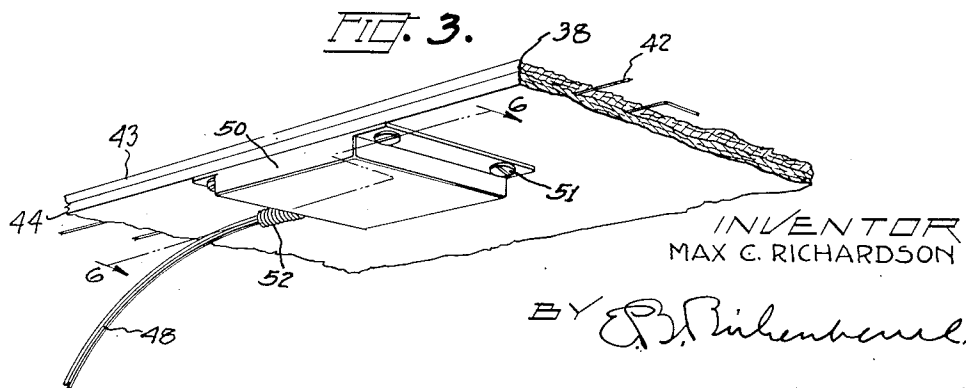
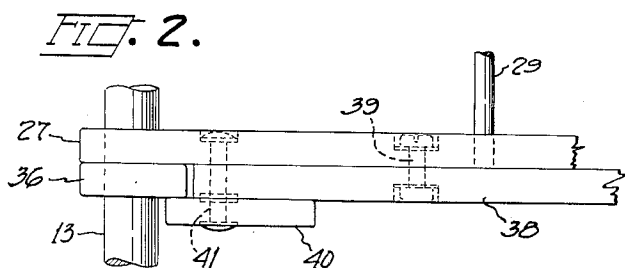
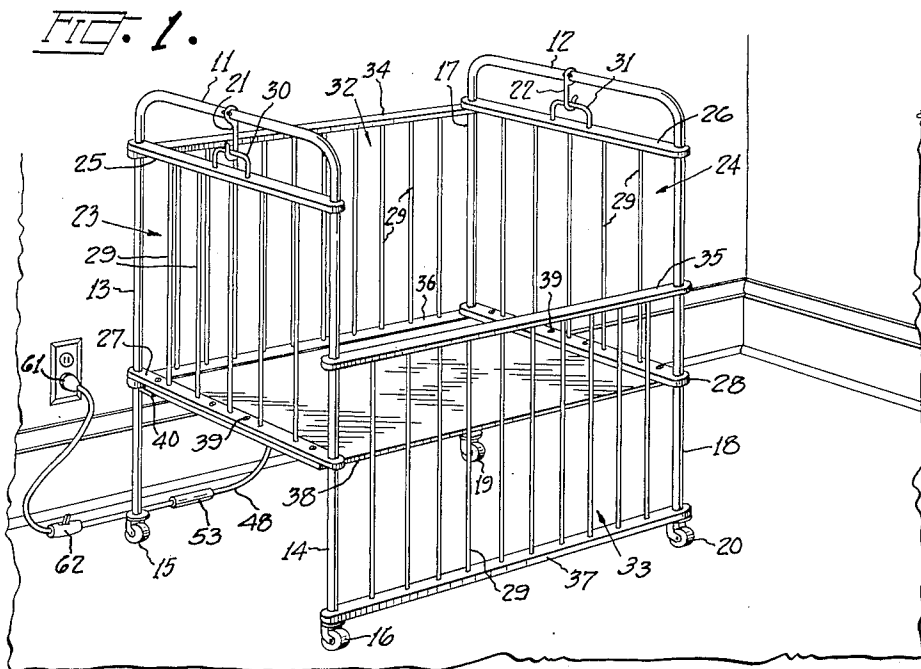
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2,621,279

ELECTRICALLY HEATED CRIB BOTTOM

Filed Sept. 21, 1948

2 SHEETS—SHEET 1



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2 SHEETS—SHEET 2

FIG. 4.

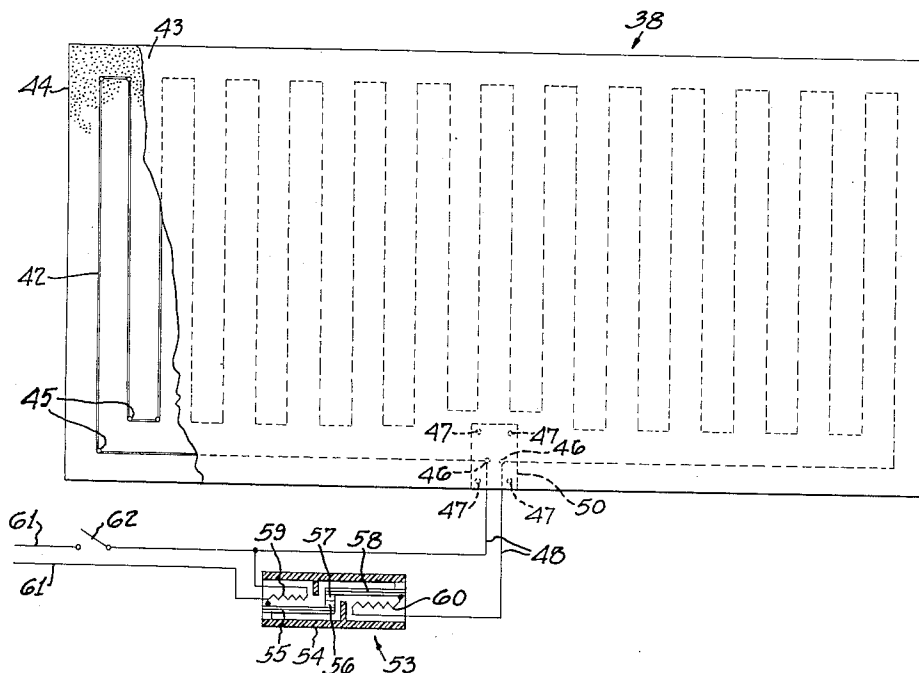


FIG. 5.

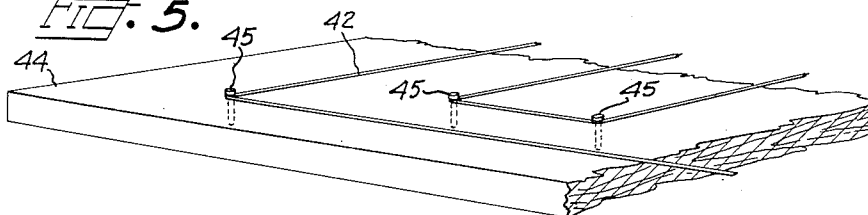
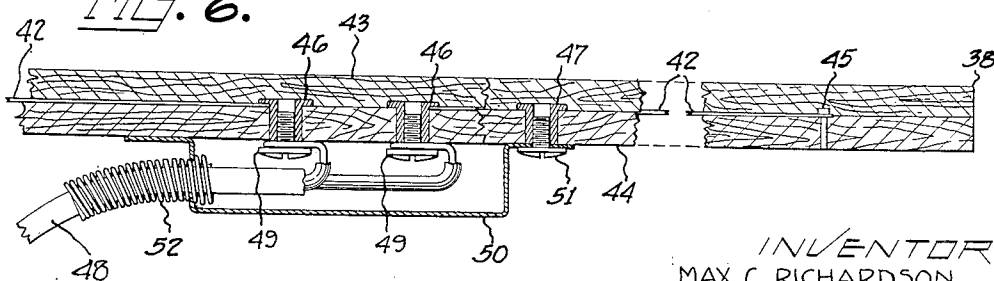


FIG. 6.



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ELECTRICALLY HEATED CRIB BOTTOM

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Application September 21, 1948, Serial No. 50,402

4 Claims. (Cl. 219-19)

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This invention relates generally to furniture for the use of small children and particularly to the type of children's furniture known as play-pens.

It is an object of this invention to provide for a child a play-pen which can readily be varied in height of bottom so that the play-pen can conveniently be used as a child's crib.

A particular object of this invention is to provide a play-pen which has an electrically warmed bottom on which the child can play both safely and comfortably.

Another object of this invention is to provide a play-pen which can also be conveniently used as a crib which has an electrically warmed bottom and a temperature limiting control for the heating element.

How these and other objects are attained will be apparent on reference to the following description and the accompanying drawings, in which:

Fig. 1 is a general view in perspective of the child's play-pen and crib of this invention.

Fig. 2 is a fragmentary end elevation of the device of Fig. 1, showing one method of supporting one end of a side panel on a turn button supported under one end of an end panel.

Fig. 3 is a fragmentary view in perspective showing the under side of the electrically heated bottom of the device of Fig. 1 and the electrical terminal protecting cover and the electrical feeder cord extending therefrom.

Fig. 4 is a somewhat diagrammatic view of the bottom structure of the device of Fig. 1 showing the electric heater embedded therein, together with a schematic showing of the temperature limiting control for the heater.

Fig. 5 is a fragmentary view in perspective showing how the electric heating wires are placed in the construction of the heated bottom of the device of Fig. 1.

Fig. 6 is a broken sectional view along the line 6-6 of Fig. 3.

Like numbers of reference refer to the same or similar parts throughout the several views.

Reference should here be made to my previous application, Serial No. 697,410, filed September 17, 1946, now Patent 2,521,540, on a "Prefabricated Panel and Warming Means Therefor," for the basic conception of the general type of panel used

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for the bottom of the device of this invention.

Referring now to the drawings, there is shown in a child's crib having two end leg members 11 and 12, member 11 having downwardly extending legs 13 and 14 terminating respectively in supporting casters 15 and 16. Similarly, member 12 has downwardly extending legs 17 and 18 terminating respectively in casters 19 and 20. Hook 21 is swingingly dependent from the crossbar of member 11 and hook 22 is swingingly dependent from the crossbar of member 12.

End panels, referred to generally as 23 and 24, each have respectively an upper rail 25, 26, a lower rail 27, 28 and rods 29 securing each top rail to its respective bottom rail. Upper rails 25 and 26 carry supporting handles 30 and 31 respectively for engagement with hooks 21 and 22.

Side panels referred to generally as 32 and 33, each have respectively an upper rail 34, 35, a lower rail 36, 37 and rods 29 securing each top rail to its respective bottom rail.

Bottom panel 38 is secured to rails 27 and 28 by bolts 39. Turn buttons 40 (of which four would be used but for simplicity only one is shown) are turnably supported by rivet pins 41 on each end of rails 27 and 28. As desired, buttons 40 can be positioned to support side panels 32 and 33 in the upper positions shown by panel 32 in Fig. 1, or to allow side panels 32, 33 to slide down to the lower position shown by panel 33 in Fig. 1.

Legs 13, 14, 17 and 18 are assembled through clearance holes in the ends of the upper and lower rails of the end and side panels as shown in Fig. 1.

With end panel handles 30 and 31 respectively engaging hooks 21 and 22, as shown in Fig. 1, the device becomes a child's crib with either side lowerable as desired.

With end panel handles 30 and 31 respectively disengaged from hooks 21 and 22, all of the side and bottom panels lower to the approximate position shown by panel 33 in Fig. 1 and the device becomes a securely fenced play-pen with the top surface of the lower rails of the side panels on the same elevation and forming an extension of the top surface of the bottom panel as shown in Figs. 1 and 2.

Bottom panel 38 has resistance wire 42 embedded therein. In the drawings a preferred

form of bottom 33 is shown as being made of an upper sheet 43 of substantially rigid insulating material such as plywood or pressboard and a lower sheet 44 of substantially rigid insulating material. B. and S., gage No. 26 wire of Driver Harris Co., Number 42 alloy has been found very satisfactory for the resistance element 42. This wire has a relatively high temperature co-efficient of resistance and a relatively low co-efficient of expansion. The size and length of wire is selected to give a satisfactory uniform coverage of the panel and a desired heat output.

Bottom panels have been readily and economically produced in the following manner: Lower sheet 44 is perforated according to a pre-determined pattern for the reception of headed insulating pins 45 and internally threaded, electrically conducting, headed screws 46 and 47. The pins and screws are inserted into the perforations in sheet 44 with the heads standing slightly above the surface of the sheet. One end of wire 42 is attached to one screw 46 and the wire is then laced over the surface of board 44 as determined by the placing of pins 45 and the other end of wire 42 is attached to the other screw 46. A good insulating glue is then spread over the upper face of sheet 44, or the lower face of sheet 43, or over both these faces, and the sheets are then pressed firmly together and held until the glue has set. Electric cord 43 can then be attached to screws 46 by attachment screws 49 as shown in Fig. 6. Sheet metal terminal cover 50 is held securely in place by screws 51 mating with screws 47. Guard opening 52 protects cord 43 in its entrance into cover 50. Cover 50 would usually be provided with an insulating paper liner.

In the use of the combination of this invention, it is possible that, on occasion, bedding or other material might so insulate panel 33 that the wire temperature might rise an undesired amount.

To limit the temperature to which the wire 42 is allowed to rise, use is made of the temperature resistance characteristic of the wire, and temperature limiting control 53 is, for convenience, made part of the attachment cord. Limiting control 53 is shown in Fig. 4 to include a supporting case 54 of insulating material with cavities as shown. Supported at one end on case 54, bi-metal element 55 at its other end carries contact member 56 normally contacting contact member 57 carried on bi-metal element 58 supported at one end on member 54. Bi-metal elements 55 and 58 are mounted to respond in the same downward direction to an increase in temperature and are mechanically biased so that in normal operation contact 56 maintains contact with contact 57.

Resistors 59 and 60, also supported on case 54, are associated as shown with bi-metals 55 and 58 respectively. Panel heater 42 is thus shown to be connected to power source 61, 61 through convenience switch 62, resistance 60 and bi-metal contacts 56 and 57. Resistor 59 is shown to be connected across power source 61, 61. Resistor 59, of relatively high resistance, and resistor 60, of relatively low resistance, are so selected that, in normal operation when connected as described, resistor 59 supplies to bi-metal 55 substantially the same amount of heat as is supplied to bi-metal 58 by resistor 60. In normal operation, therefore, bi-metals 55 and 58 move together under the influence of the heat supplied them and contacts 56, 57 remain in contact. However, as the temperature of wire 42 rises, its resistance increases and, at a pre-determined temperature of wire 42, the increased resistance of wire 42 will

have reduced the current through resistor 60 and, therefore, will have reduced the heat being applied to bi-metal 58. The downward deflection of bi-metal 59 will then be sufficiently less than that of bi-metal 55 so that contacts 56 and 57 will part. This shuts off the current through heating wire 42 and resistor 60, and contacts 56 and 57 will remain apart until switch 62 is opened and resistor 59 allows bi-metal 55 to cool to the approximate temperature of bi-metal 58.

Having thus described the new and useful combination and sub-combination means, whereby the stated and other objects of this invention are attained,

I claim:

1. An electrically heated bottom member for a child's play-pen and crib comprising a lower sheet of substantially rigid insulating material, an upper sheet of substantially rigid insulating material, a quantity of insulating glue, a length of resistance wire, a plurality of headed insulating pins and a plurality of headed and internally threaded electrically conducting screws, said lower sheet being perforated to a pre-determined pattern with holes of a pre-determined size, said pins being inserted from one side of said lower sheet into certain of said holes in a pre-determined pattern, said screws being inserted from said one side of said lower sheet into certain other of said holes in a pre-determined pattern, said wire being laid on said one side of said lower sheet in a pattern determined by said pins, said wire being terminated at certain of said screws, said upper sheet being positioned closely adjacent said one side of said lower sheet, and said glue filling all of the space between said two sheets and surrounding said wire and the headed ends of said pins and said screws.

2. The method of constructing an electrically heated bottom member for a child's play-pen and crib comprising a lower sheet of substantially rigid insulating material, an upper sheet of substantially rigid insulating material, a length of resistance wire, a plurality of headed and internally threaded electrically conducting screws, and a quantity of insulating glue, which includes perforating said lower sheet to a pre-determined pattern with holes of a pre-determined size, inserting said pins into certain of said holes in a predetermined pattern, inserting said screws into certain others of said holes in a pre-determined pattern, said pins and said screws having their headed ends extending from said holes above the top surface of said lower sheet, laying said wire on said top surface of said lower sheet in a pattern determined by said pins and certain of said screws, terminating said wire at said certain screws, spreading said glue over said top side of said lower sheet, said wire, and the exposed heads of said pins and said screws, pressing said upper sheet firmly against said glue covered top surface of said lower sheet and holding said sheets in a firmly pressed together condition until said glue has set.

3. The method of claim 2 but with the variation that the glue is first applied to the under surface of said top sheet rather than to the upper surface of said lower sheet.

4. The method of claim 2 but with the variation that the glue is applied to both the under surface of the upper sheet and the upper surface of said lower sheet.

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