

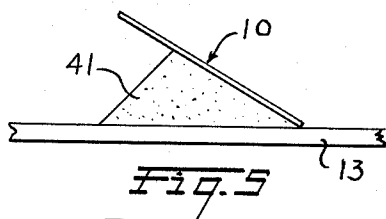
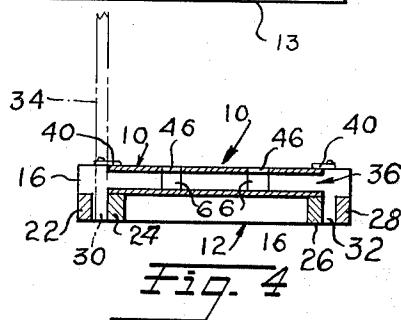
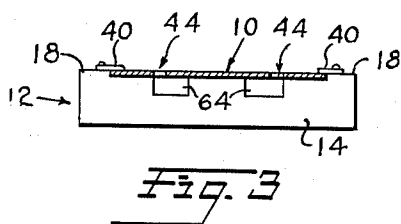
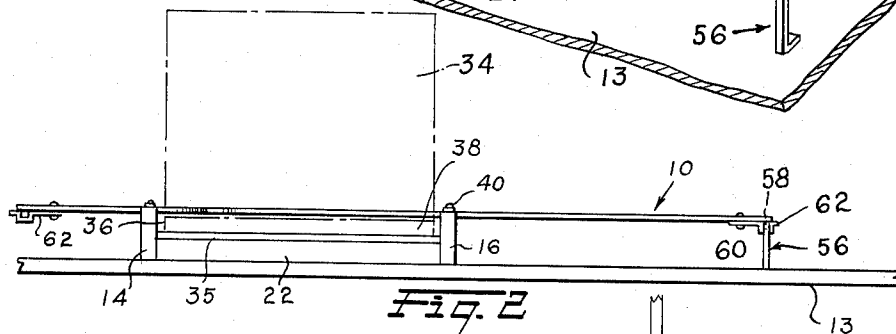
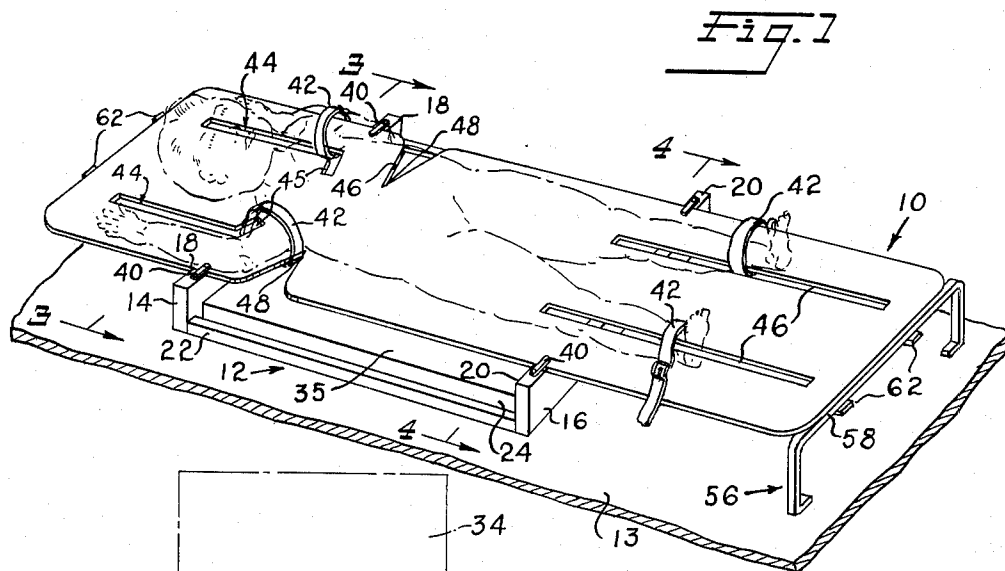
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INFANT IMMOBILIZER, PARTICULARLY FOR RADIOLOGICAL EXPOSURE

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INFANT IMMOBILIZER, PARTICULARLY FOR RADIOLOGICAL EXPOSURE

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1 Claim. (Cl. 250—54)

This invention relates to immobilizing means for preventing bodily movement of infants undergoing X-ray treatment or examination.

Infants who are too young to understand and follow instructions frequently must be subjected to X-ray treatment or radiography. Unless means are provided for retaining the infant absolutely immobilized while exposed to the X-rays, the child's movement during exposure blurs radiographic film or subjects areas of his body adjacent the area of interest to undesirable and possibly dangerous radiation. Immobilizing means for young children are presently available and are used effectively except that such means usually require that the child be strapped immobile in a sitting position. This arrangement is satisfactory if the child is at least old enough to sit up but is difficult for use with a very young baby. Hence, where it has been absolutely essential that a very young child be X-rayed, heretofore the only practical way to immobilize him has been by his being physically held by an adult in the proper position. This naturally exposes the adult to possibly dangerous radiation and it is the broad object of the present invention to eliminate this danger by providing practical infant immobilizing and positioning means which is particularly, though not exclusively suited to use with small babies.

In the drawings:

FIG. 1 is a perspective view of infant immobilizer means embodying the features of the present invention;

FIG. 2 is a side elevational view of the immobilizer;

FIG. 3 is a vertical cross section view taken substantially on the line 3—3 of FIG. 1;

FIG. 4 is a vertical cross section view taken substantially on the line 4—4 of FIG. 1; and

FIG. 5 illustrates one particular use of a part of the invention.

The immobilizer of the present invention comprises a flat, relatively stiff X-ray-pervious platform, which may be of suitable composition material such as Masonite, Bakelite (trademarks), or the like, adapted to support and have strapped thereto in supine position the infant subject who is to be exposed to X-rays. In accordance with the invention, the platform is releasably carried on a supporting frame which may be placed on a regular X-ray table or other base member with the subject properly positioned relative to the X-ray unit. In addition to supporting the platform, the frame is provided with additional means for supporting a film holder or cassette either horizontally or vertically with respect to the subject depending upon the radiographical picture desired.

In the drawings, the infant supporting platform is designated by the numeral 10 and is of generally rectangular form having a length and width sufficient to extend in all directions substantially beyond an infant of normal size. The platform 10 is adapted to be releasably supported on a frame 12 which is adapted to rest on a conventional X-ray table 13 and is composed of a pair of longitudinally spaced, transverse end members 14, 16 each having respectively laterally projecting end parts 18, 20 which extend beyond the side edges of the platform and are interconnected by pairs of laterally spaced side rails 22, 24 and 26, 28. The spaces between the respective pairs of rails afford longitudinal channels 30, 32 (see FIG. 4) clear of the opposite side edges of the platform for supporting in a vertical position a cassette, which is indicated by the

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phantom lines 34 in FIGS. 2 and 4, on one side or the other of the platform.

The vertical dimensions of the side rails are substantially less than the corresponding dimensions of the end members 14, 16 and rigidly supported on and between the inner side rails 24, 26 is a second platform 35 which affords with the platform 10 a tunnel 36 in which a cassette may be supported in a horizontal position beneath the main platform 10 as indicated by the phantom lines 38 in FIG. 2.

In order that the platform 10 may be releasably secured on the frame 12, the upper horizontal edges of the transverse members 14, 16 are suitably recessed so that the upper surface of the platform is flush with the upper surfaces of the laterally extending parts 18, 20 of the end members 14, 16. Pivotaly mounted on the parts 18, 20 are suitable latch members 40 which may be swung from their latching positions of the drawings clear of the platform to enable the latter to be separately moved so that a subject thereon may for example, be positioned obliquely with respect to an X-ray unit. Such an arrangement is intended to be illustrated in FIG. 5 where the platform 10 is depicted as being supported in a sloping position on a sandbag or positioning sponge 41 of the type conventionally employed in radiological rooms.

In accordance with the invention, the means for immobilizing the infant on the platform comprises a plurality of straps 42 which are received in pairs of longitudinally extending upper and lower slots 44, 46. The upper slots 44 are for use in immobilizing the upper part of the subject's body and have a somewhat L-shape to provide short inwardly extending slot parts 45 which are parallel to and cooperate with the upper edges 46 of a pair of relatively broad notches 48 formed in the sides of the platform. This arrangement enables the straps to encircle a subject's shoulders in the manner shown so that when the straps are tightened the shoulders are forced firmly but comfortably into immobilizing contact with the portions of the platform surface lying between the edges 46 of the notches 48 and the slot parts 45. The upper elongated parts of the slots 44 may receive additional straps (not shown) if it is desirable or necessary to further immobilize the subject by strapping his arms to the platform in a raised position adjacent his head as indicated by the phantom line in FIG. 1.

The lower slots 46 receive straps whose function is to immobilize the subject's legs by encircling the same and forcing them into firm contact with that part of the platform surface between the slots and the adjacent outer edges of the platform. As many straps as necessary may be employed and if desired the subject's leg may be immobilized between the slots in which event each strap would pass through both slots rather than around the outer platform edges.

In order to insure centering of the platform over the tunnel 36 it may be desirably to provide the platform with locating tangs which are integral with the side edges of the platform and are adapted to loosely about the outer sides of the transverse members 14, 16. This arrangement would be desirable where the immobilizer is to be used almost exclusively in radiographing the upper trunk parts of infants.

On the other hand, it may be desirable for the platform to be slidable with respect to the frame for the purpose of X-raying the subject's extremities. Under these circumstances, it will be apparent that one end or the other of the platform might be positioned to cantilever so far beyond an end of the platform that additional end support is required. This support may be provided in a variety of ways, the means shown comprising a set of detachable legs 56 which may be composed of a unitary bar

bent in an inverted U-shape with the horizontal part 58 thereof being suitably shaped as, for example, being square in cross section, to receive thereunder a complementarily bent part 60 of latch spring members 62 as illustrated in FIG. 2. Desirably, the latch springs or other releasable, support-locking means would be provided at both ends of the platform so that legs can be attached as the required end when needed.

Where the platform is longitudinally shiftable as above described, it may be necessary to locate it on a frame in a position where an immobilizing belt would extend beneath the platform on both sides of one or the other of the transverse members 14, 16. To permit this, the respective end members are notched, as shown in FIGS. 3 and 4, at 64, 66, the notches 64 of the upper end member 14 being sufficiently wide to accommodate straps in the in-turned slot parts 45 of the upper slots 44 as will be obvious from an inspection of FIG. 3.

Use of the invention should be apparent from the foregoing description. The invention has been used successfully for an extended period in the laboratory of a busy radiologist and has proved satisfactory in every respect, not only from the infant immobilizing and positioning points of view, but also from the very important point of view of eliminating any need whatever for an adult to be exposed to X-rays in order to immobilize an infant subject as has been the frequent practice heretofore.

It will be obvious to those skilled in the art that the invention is susceptible to a variety of changes and modifications without, however, departing from the scope and spirit of the appended claim:

What is claimed is:

For use in the X-ray of infants, in combination, a supporting base frame comprising a pair of longitudinally

spaced, upstanding transverse end members having top edges lying in a common horizontal plane and spaced apart a distance slightly greater than the width of a conventional X-ray film holder, a platform rigidly connected between said transverse members in a horizontal plane spaced below the plane of the top edges of said transverse members a distance in excess of the thickness of a conventional X-ray film holder, a second substantially rectangular, infant supporting platform having a transverse dimension not greater than the corresponding dimension of said frame and a longitudinal dimension substantially in excess thereof, means for releasably connecting said platform to the upper horizontal edges of said transverse members with the longitudinal axis of said platform normal to said transverse members, said first and second platforms affording with said transverse members a tunnel open at the sides for the lateral movement of an X-ray film holder onto and off of said first platform, said releasable means being operable to permit said second platform to be selectively positioned longitudinally on said frame or to be removed therefrom, slots in said platform spaced inwardly in close adjacency to the side edges of said frame, and flexible fastening elements extending through said slots and adapted to encircle parts of an infant's body to maintain the same immobilized irrespective of the degree of movement of said platform with respect to said frame.

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