Dec. 25, 1951 A. T. KVARNSTROM 2,580,178

COLLAPSIBLE HIGH CHAIR

Filed Sept. 15, 1947 2 SHEETS--SHEET 1

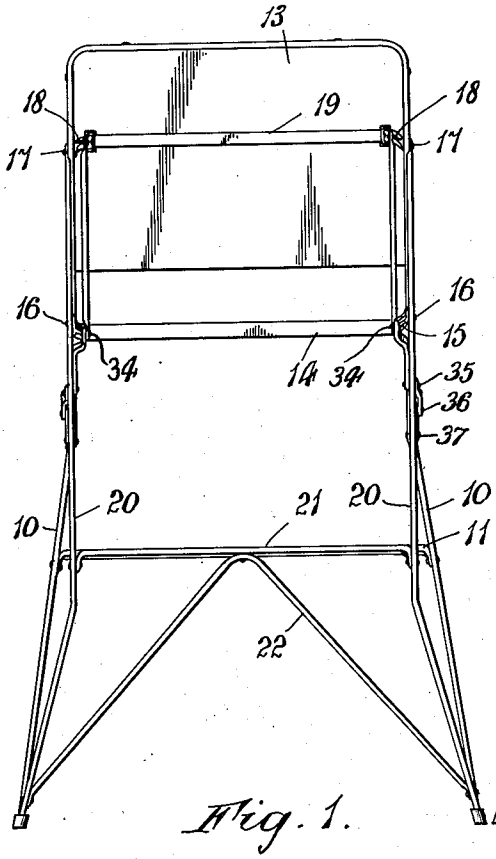


Fig. 1.

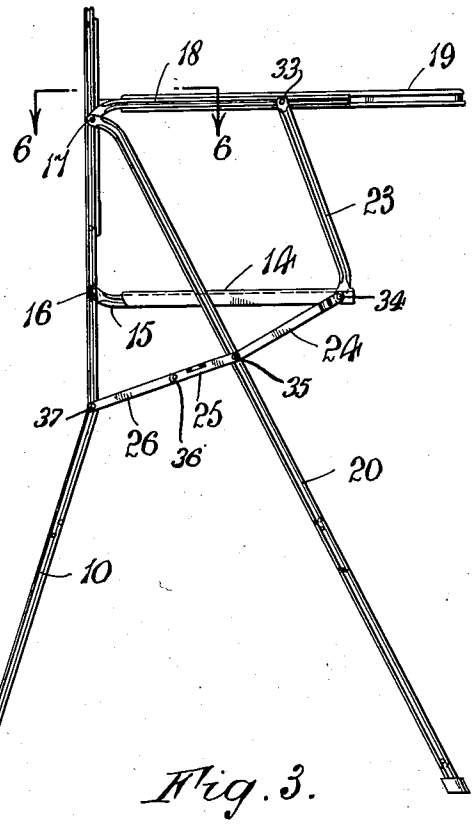


Fig. 3.

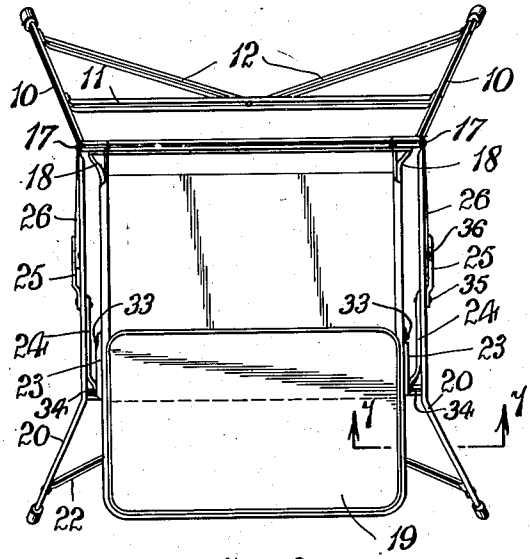


Fig. 2.

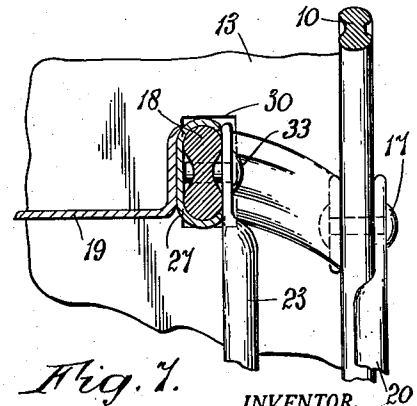


Fig. 7.

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COLLAPSIBLE HIGH CHAIR

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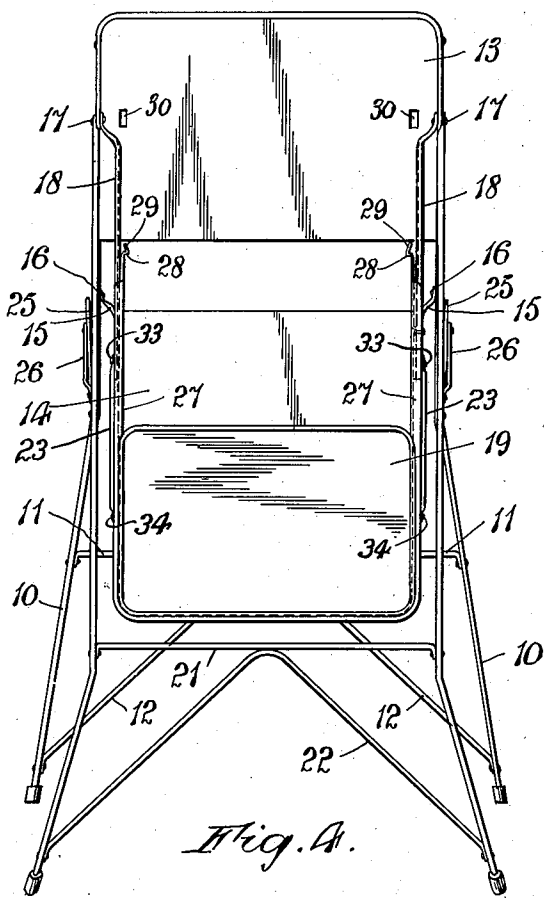


Fig. 4.

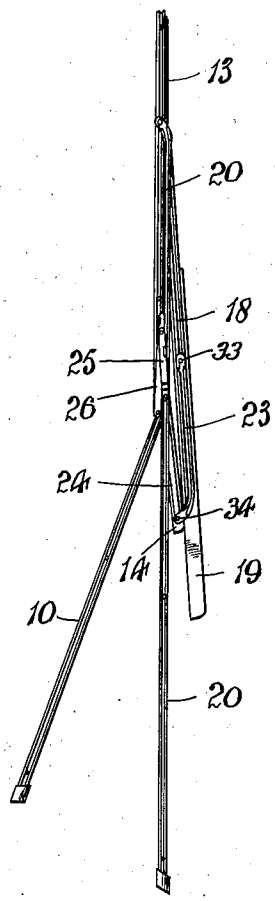


Fig. 5.

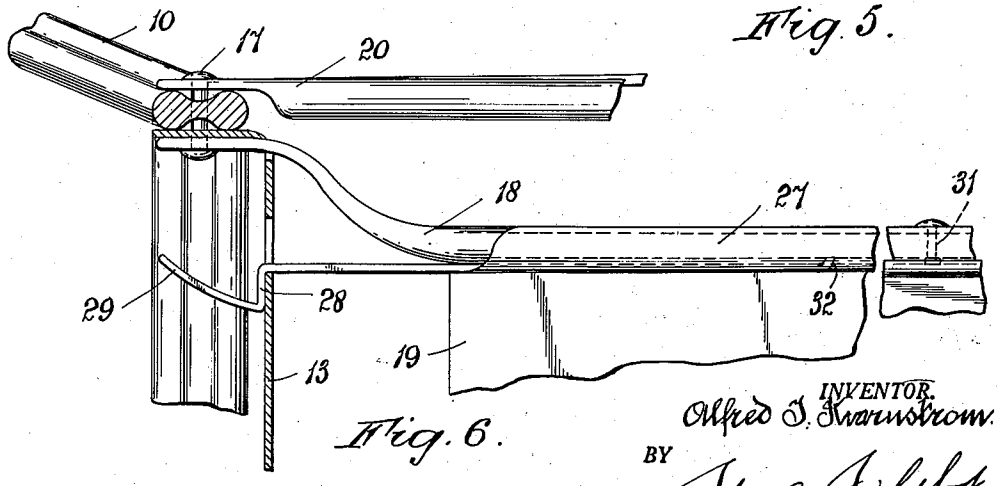


Fig. 6.

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COLLAPSIBLE HIGH CHAIR

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3 Claims. (Cl. 155—127)

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This invention relates to folding chairs and, more particularly, folding high chairs for the use of small children and has for its object to provide such a device of simple but rugged construction capable of easy operation and having special safety features intended to minimize the possibility of a child seated in the chair falling or escaping therefrom or otherwise injuring himself by manipulating movable parts of the chair.

A still further object is to provide such a chair wherein great freedom is provided for seating a child in the chair or removing him therefrom without sacrificing proper and adequate restraint of the child when seated against moving from a safe but comfortable position.

Still further objects or advantages additional or subsidiary to the aforesaid objects, or resulting from the construction or operation of the invention as it may be carried into effect, will become apparent as the said invention is hereinafter further disclosed.

In carrying the said invention into effect, I may adopt the novel construction and arrangement of parts hereinafter described, by way of example, having reference to the accompanying drawing, wherein:

Figure 1 is a front elevation of a chair embodying the said invention, in its open position of use;

Figure 2 is a plan of the same;

Figure 3 is a side elevation of the same;

Figure 4 is a similar view of Figure 1 showing the chair in its collapsed or folded condition;

Figure 5 is a side elevation of the same in such collapsed condition;

Figure 6 is an enlarged fragmentary detail view taken on a plane indicated by the line 6—6 in Figure 3, showing certain parts of the chair; and

Figure 7 is a fragmentary enlarged detail view taken on a plane indicated by the line 7—7 in Figure 2.

Similar characters of reference indicate similar parts in the several figures of the drawing.

The back frame 10 is of inverted U-shaped configuration providing legs which are braced by members 11 and 12 for rigidity, and a plate 13 is secured in the upper portion of the said frame to form the back proper of the chair.

The seat 14 is carried by a U-shaped frame 15, the ends of the legs of which frame are hinged at 16 to the uprights of the aforesaid back frame 10. Above this seat frame, and hinged at 17, are arms 18 forming a support for the table or tray 19. Also hinged at 17, and extending forwardly and downwardly therefrom, are the front legs 20 suitably braced as at 21 and 22.

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The members 18 and 15 are connected by linkage 23 (at 33 and 34), and the members 15 and 20 are also connected by linkage 24 (at 34 and 35), whereby the tray structure, the seat structure, and the front leg structure may be folded against the rear leg structure as in Figures 4 and 5; the particular operation of the linkage between the structures being well known in the art to which this invention appertains so that detailed explanation herein is not considered necessary. 25 and 26 are the mutually hinged members (as at 36) of a common type of collapsible toggle brace connecting the rear leg structure at 37 with the front leg structure at 35 as shown.

Up to this point the description is that of elements commonly used and combined in the design of folding chairs and similar articles of furniture and admits of many variations as to structural form and design as will be quite obvious. It is proposed to construct the frame described of rolled, extruded or formed bars of a section similar to that shown in Figures 6 and 7 characterized by their relatively flat form and the provision of medial longitudinal grooves or recesses along their sides. Such bars may, of course, be solid or hollow according to the method of construction adopted; and frames having this characteristic section not only are strong and attractive appearing, but the frame elements shown, when folded to the position shown in Figures 4 and 5, occupy a minimum of space.

On the folding of the frames together, the two marginal ridges of the side walls of the bars, flanking the medial grooves, offer substantial support and guidance for the hinged end portions of the several frames as can be clearly seen from an examination of the said Figures 6 and 7. Furthermore, the pintles of such hinges, passing through the narrow section of the said bars as shown in the said figures, carry the connected parts of the frame members in spaced relation to the medial recessed portion of the bars so that a freely operating hinged structure, but without looseness or tendency to wobble, is secured.

Children's high chairs as at present constructed and marketed have long suffered from markedly undesirable features especially as regards provision for the ready seating of a child in a chair or its removal therefrom, protection of the child against hurt or injury (as by trapping the fingers between the tray structure and the arm structure of such a chair), and guarding against the ability of the child to raise the tray structure and slide forwardly beneath the same. To prevent the last occurrence it has been usual to provide a strap to

embrace and secure the child in position, but this has not proved too satisfactory.

By my invention I propose to overcome all these disadvantages in a very simple manner by providing for the slidable support of the tray 19 on the members 18, the tray being shown as provided on its ends with channel members 27 embracing and slidable on the said arms 18. These channel members, on their rear ends, are also provided with spring latches 28 having thumb pieces 29 thereon which may, in the raised position of the arms 18, pass through aligned openings 30 provided in the back plate 13 as clearly shown in Figure 6.

Thus, when the latches 28 are not engaged with the back plate 13, the tray 19 is free to slide outwardly of the arms 18 to an extent limited by a stop 31 on each of the said arms 18, the channels 27 being provided with inwardly offset abutments 32 to engage the said stops when the tray 19 is extended to its full limit. This extended position of the tray is shown in Figures 4 and 5.

With the arms raised to the position Figures 1, 2, and 3 and the tray 19 extended in the manner described, a child may be freely seated in the chair without obstruction and the tray thereafter moved inwardly to the position shown in Figures 1, 2 and 3 whereupon the latches 28 are pushed through the openings 30 of the back plate 13 and snap in behind the margins of the said openings, as shown in Figure 6. In this position of the parts the latches are not accessible to the child and it cannot move the tray outwardly in order to give itself room to climb over or under the tray. Neither can it raise the tray to any appreciable extent due to the limitations imposed thereon by the bracing 23 and the fact that the latches, passing through the restrictive openings 30, also assist in locking the arms 18 as well as the tray 19 in position of use.

When it is desired to remove the child from the chair, it is merely necessary for a person standing behind the chair to grasp the upper ends of the legs 20 at the hinges 17 and the thumb piece 29 by the fingers and the thumbs of the hands and squeeze to release the latches 28 from the back plate 13, whereupon the tray may be slid outwardly on the said arms 18. Thus a large and clear opening behind the tray is then provided for the removal of the child and the several frames, upon the subsequent releasing operation of the linkage 25 and 26, may be folded together for storage.

The device as described is simple, strong, attractive in appearance, easy of operation, and provides for both safety and comfort of the child.

This invention may be developed within the scope of the following claims without departing from the essential features of the said invention, and it is desired that the specification and drawing be read as being merely illustrative of a practical embodiment of the same and not in a strictly limiting sense.

What I claim is:

1. In a device of the class described, a back and leg structure, a seat, means hinging said seat to said structure, a front leg structure hinged to said back and leg structure below the upper end thereof and above said seat hinging means, arms having a common hinge connection with said front leg structure on said back and leg structure, linkage connecting the forward part of said arms with said seat, further linkage connecting the forward part of said seat with said front leg structure whereby said arms, seat and front leg structure may be mutually folded downwardly toward said back leg structure, and a toggle brace connecting said front and back and leg structures.

2. In a device of the class described, a back and leg structure, a front leg structure hinged at its upper end to the back and leg structure below the upper end of the latter, a seat, a pair of arms, means hinging said seat and arms to said back and leg structure, linkage connecting the forward part of said arms with said seat, further linkage connecting the forward part of said seat with said front leg structure, whereby said arms, seat and front leg structure may be mutually folded downwardly toward said back and leg structure, and a toggle brace connecting said front and back and leg structures.

3. In a device of the class described, a back and leg structure, a front leg structure hinged at its upper end to the back and leg structure below the upper end of the latter, a seat, a pair of arms, means hinging said seat and arms to said back structure, linkage connecting the forward part of said arms with said seat and linkage connecting the forward part of said seat with said front leg structure whereby said arms, seat and front leg structure may be mutually folded downwardly toward said back and leg structure, and a toggle brace connecting said front and back and leg structures.

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