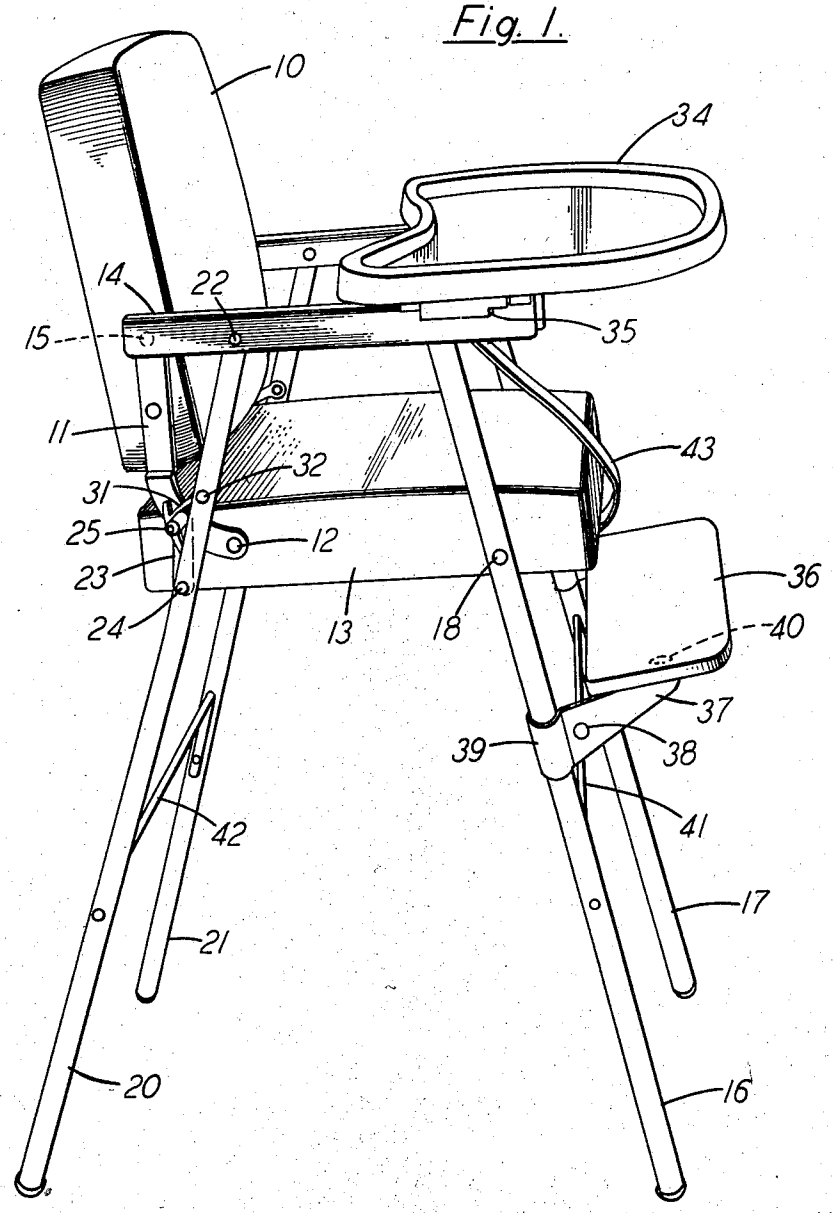
Sept. 9, 1958 M. C. WEINER 2,851,086

LOCK FOR FOLDING CHAIRS

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Fig. 1.



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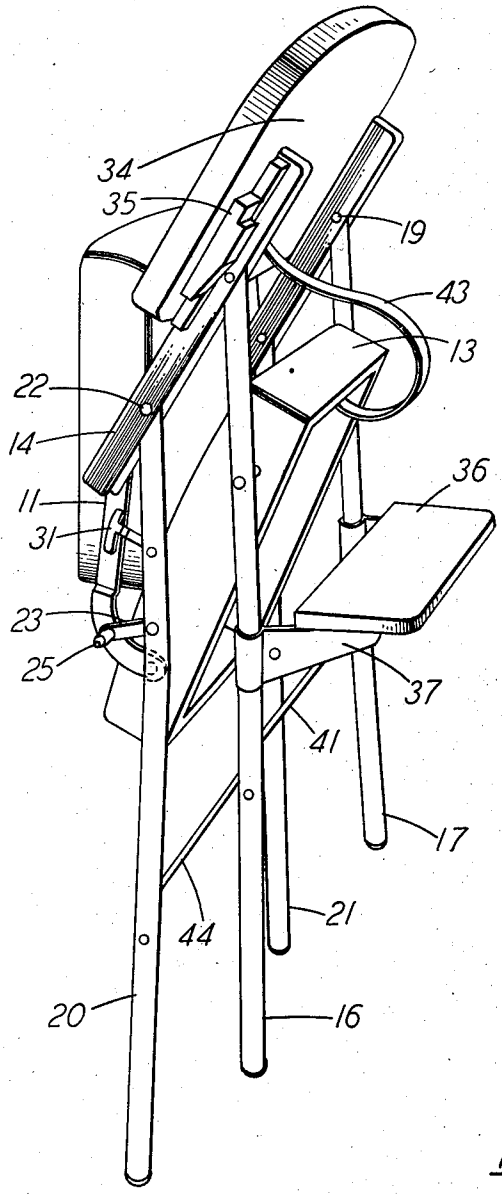


Fig. 2.

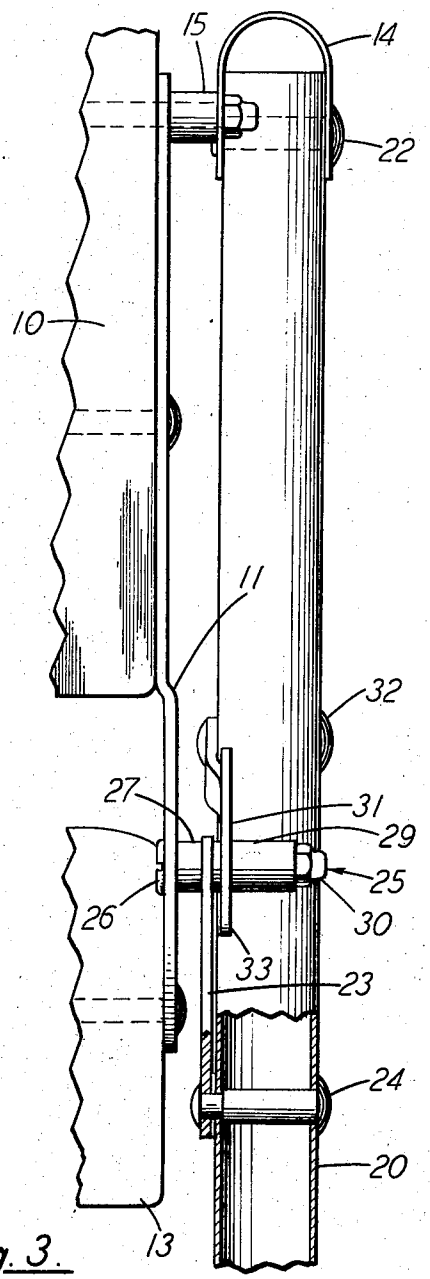


Fig. 3.

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LOCK FOR FOLDING CHAIRS

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4 Claims. (Cl. 155—139)

This invention relates to the construction of folding chairs, and has been developed primarily to cope with the problems present in the adaptation of a folding mechanism to children's highchairs. The notorious tendency for children to occupy chairs in strange attitudes, and to shift their weight continually and with violence from one part of the chair to the other makes it imperative that the folding mechanism be designed to accommodate such conditions without establishing any tendency to move the chair toward the folded condition, or to otherwise endanger the occupant. In addition to the unpredictable behavior of the occupant of the chair, outside forces are often brought to bear which must be accounted for in the design of the mechanism. It is often desirable to drag an occupied chair across the floor from one part of the room to the other, and such a maneuver will apply substantial forces to the legs and folding linkage which are very difficult to predict. The chair can be moved in such a fashion that the principal portion of the weight is supported in an almost endless variety of weight-distribution combinations between the several legs, and any mechanical linkage is normally quite sensitive in its behavior to the direction of applied forces with respect to the pivot points. A folding chair mechanism of conventional type which will accommodate all of these unpredictable conditions without disturbing the stability of the chair would be most remarkable; and if available at all, would carry with it the likelihood of prohibitive cost.

In view of the difficulty of designing a mechanism which would, in and of itself, accommodate all of the infinite changes in condition to which the chair is subjected, applicant has discovered a system which can be incorporated in a relatively conventional folding chair mechanism which will adequately lock the structure in the erected condition so that no amount of mistreatment will serve to move the chair toward a folded or otherwise unstable position.

The several features of the invention will be analyzed in detail through a discussion of the particular embodiments illustrated in the accompanying drawings. In the drawings:

Figure 1 presents a perspective view in side elevation of a chair embodying this invention.

Figure 2 presents a perspective view of the same chair in the folded condition.

Figure 3 shows a fragmentary view on an enlarged scale of the locking mechanism, as seen directly from the rear.

Referring to the drawings, the illustrated chair includes a back unit composed of an upholstered section **10** and a pair of opposite arms **11** which are each attached to the lower part of the upholstered unit and extend downwardly in a curved configuration. The lower part of each of the arms **11** is pivotally connected at **12** to the seat unit **13**. Opposite arm rests **14** are pivotally connected to the upper end of the arms **11** at points as indicated at **15** in Figure 1.

The front legs **16** and **17** are each pivotally connected

to the seat **13** as shown at **18**, and are also pivotally connected to the arm rest **14** at the upper extremities of the front legs. This point of connection is best shown at **19** in Figure 2. The rear legs **20** and **21** are also each pivotally connected to the arm rests **14** at points corresponding to **22** in Figure 1, and the position of the rear legs about the points **22** is determined by the links **23**. These links are connected at one end to the rear legs as shown at **24**, with the opposite ends being connected to the arms **11** at the abutments **25**. The construction of the abutments **25** is best indicated in Figure 3, and includes a bolt **26** fitted with a suitable spacing washer **27**, and with a resilient tubular member **29** for absorbing the shock as the rear legs come into engagement therewith. The nut **30** completes the assembly, and it should be observed that the abutment **25** is positioned so that it limits the rearward swing of the rear legs about the pivot points **22** with respect to the back and seat. When the chair is in the erect condition, the upholstered unit **10** and the seat unit **13** have a relatively fixed relationship, and the abutment **25** can therefore be positioned at some point on the seat structure **13**. The illustrated arrangement is preferred, however, in view of the fact that the co-axial relationship between the abutment **25** and the pivot for the links **23** tends to a more economical assembly operation and utilizes the rigidity of the relatively heavy arms **11** to transmit the forces involved.

To maintain the erected position of the chair against the variety of conditions outlined previously herein, applicant has provided a latch in the form of a hook-shaped member **31** pivotally connected to each of the rear legs at the point indicated at **32**. The lower extremity **33** (see Figure 3) of the hook member **31** engages the abutment **25** when the chair is in erect position. Such engagement securely locks the folding action of the chair, since it is no longer possible for the rear legs **20** and **21** to move forwardly with respect to the seat away from the abutment **25**. The upper portion of the hook member **31** may be formed in some convenient fashion to provide an effective grip for engagement of the finger to facilitate the unlocking of the chair prior to folding it.

A tray **34** is mounted on the arms **14** with a conventional positioning adjustment mechanism generally indicated at **35**. A foot rest panel **36** is mounted on brackets **37** having an adjustable clamping action determined by the tightness of the screw **38** which will permit positioning of the foot rest at adjustable vertical locations. A portion **39** of the brackets **37** surrounds the legs in the manner of a collar, and tightening of the screw **38** serves to constrict the portion **39** and establish the necessary clamping action. The foot rest **36** is preferably secured to the brackets **37** by a single fastening as shown at **40** in Figure 1, so that the vertical movement of the foot rest assembly (accompanied by angular movements of the brackets **37** about the fastening **40** as a result of the divergence of the legs) may be freely accommodated by the radially-extending arm portions of the brackets **37** without necessity of removing or re-locating fastenings.

Conventional cross-braces are provided as shown at **41** on the front legs and **42** on the rear legs to provide added strength and to avoid over-loading the various pivot connections. The strap **43** is conventional, and is installed to prevent the infant from sliding downward and out of the chair underneath the tray **34**.

The particular embodiments of the present invention which have been illustrated and discussed herein are for illustrative purposes only and are not to be considered as a limitation upon the scope of the appended claims. In these claims, it is my intent to claim the entire invention disclosed herein, except as I am limited by the prior art.

I claim:

1. In a folding chair having a seat, a back pivotally

connected to said seat, arm rests pivotally connected to said back, front legs pivotally connected to said seat and to said arm rests respectively, rear legs pivotally connected at the upper end thereof to said arm rests, and a link connecting each of said rear legs respectively to a member substantially fixed with respect to said back when said chair is in the erected condition, the improvement comprising: abutment means substantially fixed with respect to said back when said chair is in the erected condition, said abutment means being disposed to limit the rotation of said rear legs to the rear with respect to said back; and disengageable latch means for interconnecting said rear legs respectively to said abutment means when said chair is in the erected condition.

2. In a folding chair having a seat, a back pivotally connected to said seat, arm rests pivotally connected to said back, front legs pivotally connected to said seat and to said arm rests respectively, rear legs pivotally connected at the upper end thereof to said arm rests, and a link connecting each of said rear legs respectively to a member substantially fixed with respect to said back when said chair is in the erected condition, the improvement comprising: abutment means substantially fixed with respect to said back when said chair is in the erected condition, said abutment means being disposed to limit the rotation of said rear legs to the rear with respect to said back; and disengageable latch means for interconnecting said rear legs respectively to a point substantially fixed with respect to said back when said chair is in the erected condition.

3. In a folding chair having a seat, a back pivotally connected to said seat, arm rests pivotally connected to said back, front legs pivotally connected to said seat and to said arm rests respectively, rear legs pivotally connected at the upper end thereof to said arm rests, and a link connecting each of said rear legs respectively to a member substantially fixed with respect to said back when said chair is in the erected condition, the improvement comprising: abutment means substantially fixed with respect to said back when said chair is in the erected condition, said abutment means being disposed to limit the rotation of said rear legs with respect to said back; and disengageable latch means for interconnecting a rear leg and said abutment means when said chair is in the erected condition.

4. In a folding chair having a seat, a back pivotally connected to said seat, arm rests pivotally connected to said back, front legs pivotally connected to said seat and to said arm rests respectively, rear legs pivotally connected at the upper end thereof to said arm rests, and a link connecting each of said rear legs respectively to a member substantially fixed with respect to said back when said chair is in the erected condition, the improvement comprising: abutment means substantially fixed with respect to said back when said chair is in the erected condition, said abutment means being disposed to limit the rotation of said rear legs with respect to said back; and disengageable latch means for interconnecting a rear leg and a point substantially fixed with respect to said back when said chair is in the erected condition.

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