Sept. 1, 1964 J. A. EASTERBROOK 3,147,040

ADJUSTABLE CHAIRS

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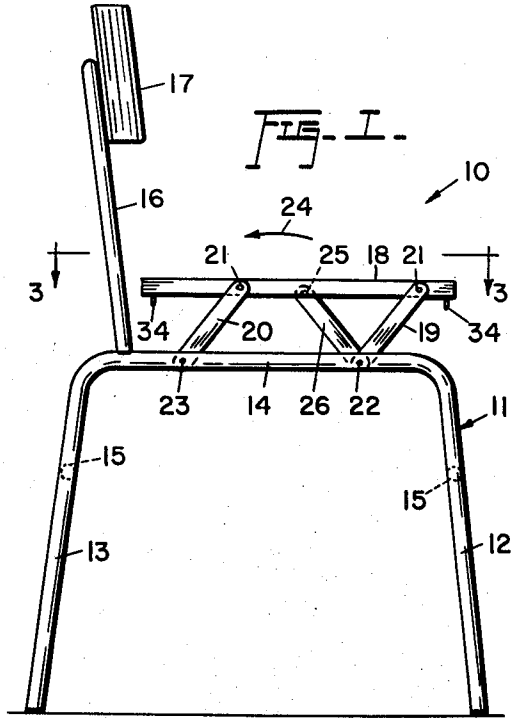


FIG. 1.

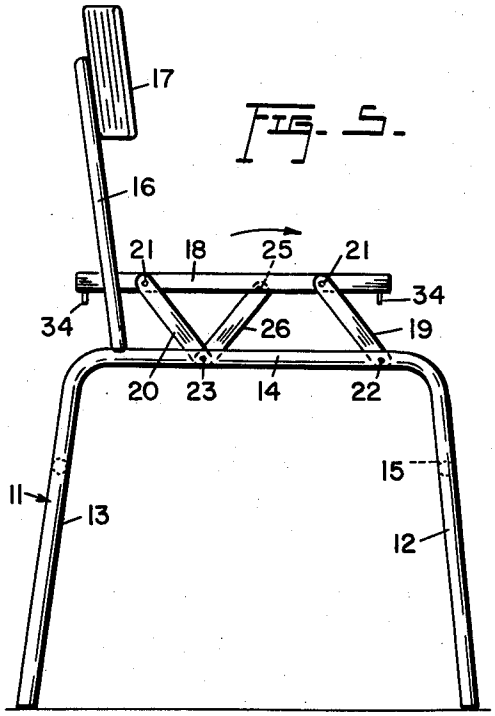


FIG. 5.

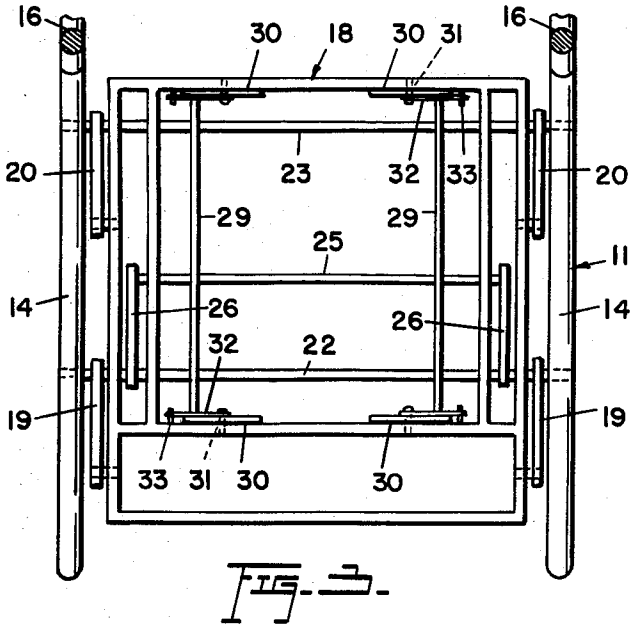


FIG. 3.

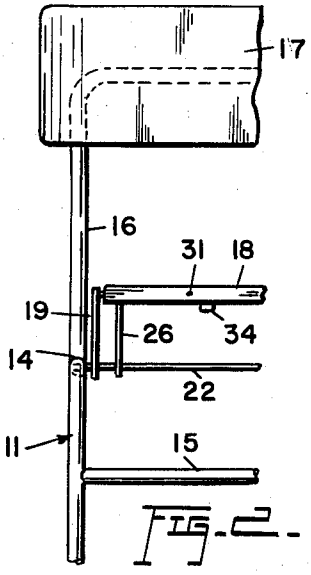


FIG. 2.

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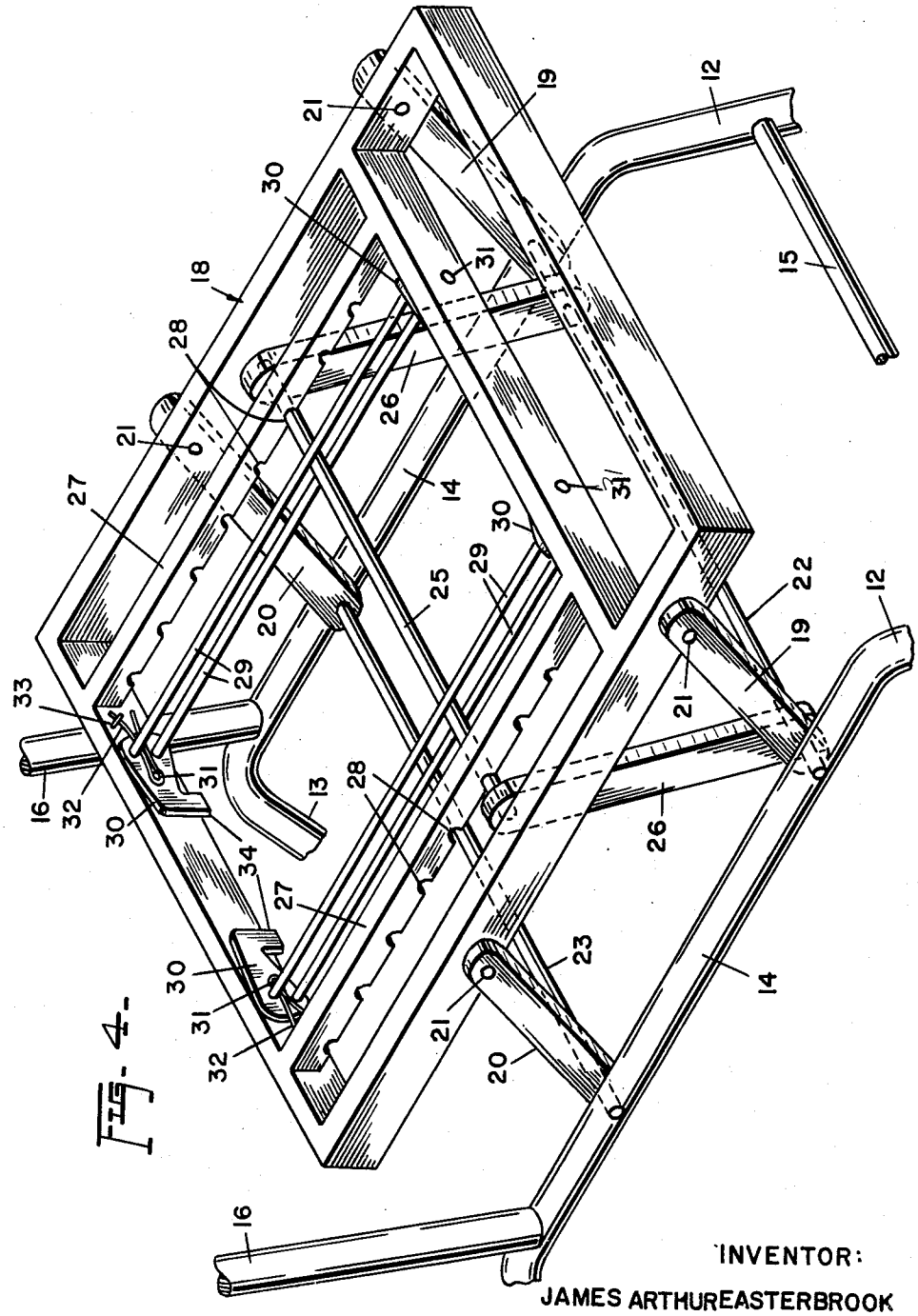


FIG. 4.

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ADJUSTABLE CHAIRS

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This invention relates to adjustable chairs, that is to say chairs in which relative movement between the seat, backrest and framework is facilitated to allow for varying characteristics of the person using the chair. By framework is meant the portion of the chair other than the backrest and seat, and it of course includes the legs.

Such chairs are hereinafter referred to as adjustable chairs of the kind referred to.

For example, an infant normally requires a high seat position at a standard table together with a small seat and a low backrest, while an older person requires a lower seat, a larger seat and a higher backrest. However, there are circumstances in which it is desirable to provide a chair to permit an infant to rest its feet on the floor, in which circumstances the reverse of the foregoing is required, i.e. as the seat is moved to a lower position it becomes smaller.

The present invention consists in an adjustable chair of the kind referred to comprising a framework, a backrest and a seat, and in which the seat is movable between upper and lower limits relative to the framework and backrest, whilst maintaining a substantially horizontal position and in which at one said limit the seat lies partly beneath the backrest and in moving towards said other limit moves forwardly relative to said backrest, whereby the available area of the seat and the height of the backrest from the seat varies according to the height of the seat from the framework.

The seat may lie partly beneath the backrest when it is at its uppermost limit of movement, in which case the movement is such that the seat moves forwardly relative to said backrest as it is moved towards its lowermost limit.

Alternatively, the seat may lie partly beneath the backrest when it is at its lowermost limit of movement, in which case the movement is such that it moves forwardly relative to said backrest as it is moved towards its uppermost limit.

It is an object of the present invention to provide an adjustable chair of the kind referred to having a simple mechanism for providing said relative movement.

It is a further object to provide an adjustable chair of the kind referred to that may readily be adjusted to accommodate a growing child at a standard table, that is to say that as the seat is moved to a lower position it simultaneously increases in size.

It is a still further object to provide an adjustable chair of the kind referred to that as the seat is moved to a lower position it simultaneously decreases in size.

With the foregoing objects in view, and such other objects and advantages as will become apparent to those skilled in the art to which this invention relates as this specification proceeds, my invention consists essentially in the arrangement and construction of parts all as hereinafter more particularly described, reference being had to the accompanying drawings in which:

FIGURE 1 is a side elevational view of an adjustable chair in accordance with the invention;

FIGURE 2 is a fragmentary front elevational view thereof;

FIGURE 3 is an enlarged fragmentary horizontal sectional view, taken substantially in the plane of the line 3—3 in FIGURE 1;

FIGURE 4 is an enlarged fragmentary isometric view showing the mechanism of the chair; and

FIGURE 5 is a side elevational view, similar to that in FIGURE 1, but showing a modified embodiment of the invention.

Like characters of reference are used to designate like parts throughout the several views.

Referring now to the accompanying drawings in detail, more particularly to FIGURES 1–4 inclusive, the adjustable chair in accordance with the invention is designated generally by the reference numeral **10** and embodies in its construction a suitable frame **11** consisting of front and rear pairs of legs **12, 13** connected together by substantially horizontal bars **14** which are spaced transversely of the chair, as shown. The legs in each pair are connected together by transverse braces **15**, while members **16** extend upwardly from the bars **14** adjacent the rear legs **13** to support a suitable back rest **17**.

A suitable seat (not shown) is mounted upon a platform **18** which is supported above the frame bars **14** by parallelogram linkage comprising front and rear pairs of links **19, 20**, the upper ends of which are pivoted to the platform **18** as at **21**. The lower ends of the front links **19** are secured to a cross shaft **22** which is journalled in the frame bars **14**, while the lower ends of the rear links **20** are secured to a cross shaft **23** which is similarly journalled in the frame bars. It will be apparent from the foregoing that the seat supporting platform **18** is capable of a translatory movement, as for example, in the direction of the arrow **24** in FIGURE 1, during which the seat rises higher above the frame bars **14** and moves rearwardly toward the back rest **17** as the links **19, 20** swing rearwardly about the axes of the shafts **22, 23**. Conversely, the seat moves forwardly and downwardly relative to the back rest during forward swinging of the links.

Means are provided for locking the seat platform **18** in an adjusted position, such means comprising a locking strut which consists of a support bar **25** secured to the upper ends of a pair of links **26**, the lower ends of which are pivotally mounted on the cross shaft **22** inwardly of the aforementioned links **19**. As is clearly shown in FIGURE 4, the seat platform **18** is provided with a pair of bar members **27** equipped at their lower edge with rows of notches **28** in which the support bar **25** is selectively received, whereby to releasably lock the seat platform in an adjusted position. As shown in FIGURE 1, the seat platform supporting links **19, 20** extend upwardly and forwardly from the cross shafts **22, 23**, while the links **26** of the support bar **25** extend upwardly and rearwardly from the cross shaft **22**, so that the above described locking action of the seat platform may be effected. The modified embodiment of the invention shown in FIGURE 5 is the same as the embodiment of FIGURE 1, except that the arrangement of the parts is reversed, with the seat supporting links **19, 20** extending rearwardly from the cross shafts **22, 23** and the support bar links **26** extending forwardly from the cross shaft **23** to which they are attached, rather than to the cross shaft **22**. Thus, in the modified embodiment of FIGURE 5, the seat platform is translated upwardly and forwardly relative to the back rest **17** during forward swinging of the links **19, 20**, and conversely, is translated downwardly and rearwardly during rearward swinging thereof. In both embodiments of the invention the transverse spacing of the back rest supporting member **16** is sufficiently wide to provide clearance for the seat platform when the latter is rearwardly translated.

Actuating means are provided for disengaging the support bar **25** from the notches **28** of the seat platform, such means comprising two pairs of vertically spaced rods **29** which extend from front to back within the seat platform **18** and are rigidly secured at the ends thereof to pairs of levers **30**, pivotally connected to the seat plat-

form as at **31**. Suitable springs **32**, mounted on the pivots **31** and engaging the rods **29** as well as abutment pins **33**, bias the levers **30** so as to urge the rods **29** upwardly, thus correspondingly urging the support bar **25** into the selected of the notches **28** and locking the seat platform in an adjusted position. However, it will be noted that the levers **30** are provided with finger-pieces **34**, whereby they may be swung about their pivots **31** to shift the rods **29** in a downward direction, thus disengaging the support bar **25** from the notches **28** and permitting another adjustment of the seat platform to be made.

The chair of the present invention may conveniently be constructed from metal, wood or plastics or any other suitable material, or it may be made from a combination thereof. For example, the legs may be made from tubular steel and the seat frame from plastic material. In all cases it is to be understood that a suitable seat is secured to the seat frame **3**.

Since various modifications can be made in my invention as hereinabove described, and many apparently widely different embodiments of same made within the spirit and scope of the claims without departing from such spirit and scope, it is intended that all matter contained in the accompanying specification shall be interpreted as illustrative only and not in a limiting sense.

What I claim as my invention is:

1. A chair comprising a frame, a backrest and a seat, said frame including a pair of horizontally arranged bars disposed in fore and aft direction of the chair, a parallel link connection between the horizontal bars and the seat for disposing the seat horizontally and spaced above said bars and so that the seat, in moving from one spaced position to another, moves fore and aft of the frame, a strut comprising a pair of parallel links and a support bar, each of said pair of links being pivotally secured at one end to one of the horizontal bars and the upper ends of said links being joined by the support bar, notches in the seat for engagement with the support bar to lock the seat in a desired spaced position above the horizontal bars and a consequential fore and aft position relative to the frame and backrest, said strut being angularly disposed relative to the horizontal bars in the opposite direction to the parallel link connection thereby to constitute a strut, a pair of rods disposed fore and aft of the seat and pivotally secured thereto for receiving the strut therebetween, biasing means to cause said rods normally to hold the support bar in engagement with a pair of the seat notches and means for turning said rods about their pivots against the biasing means to release the strut from the notches when it is desired to move the seat to another horizontal plane.

2. A chair as claimed in claim 1 wherein the rods are secured at least at one end to a two armed lever that is pivotally secured to the seat frame and the second arm of said lever constituting means for turning the rods and releasing the strut from the seat notches.

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