April 17, 1962 R. G. GELLER 3,030,141

FOLDING CHAIR WITH FLARING BACK

Filed Aug. 26, 1959

Fig. 1

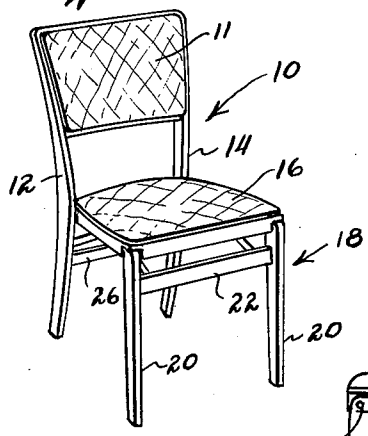


Fig. 2

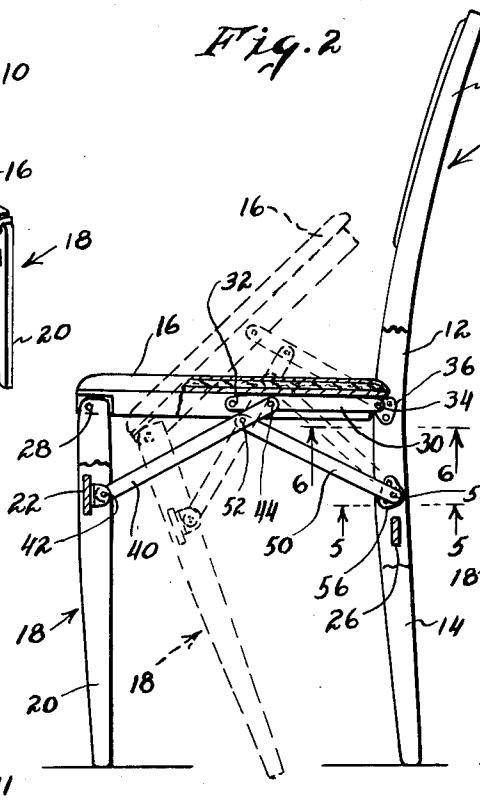


Fig. 3

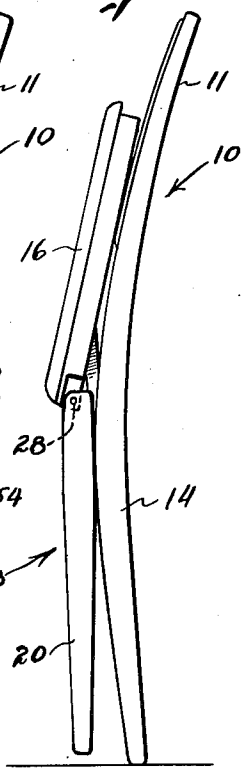


Fig. 4

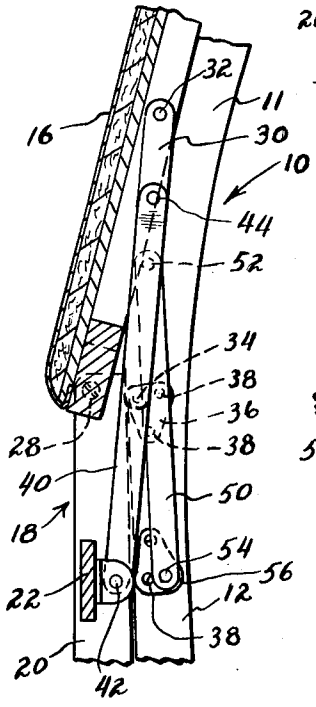


Fig. 5

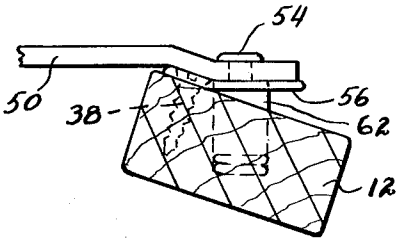
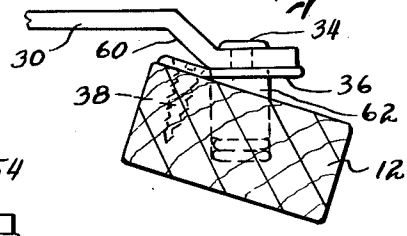


Fig. 6



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FOLDING CHAIR WITH FLARING BACK

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3 Claims. (Cl. 297—60)

This invention relates to folding chairs.

In the construction of high-class folding chairs, an effort is made to have the furniture look as much as possible like permanent furniture. For this reason, the linkages which permit the folding are placed high on the legs and in position to be largely obscured by the seat and other parts of the chair. One of the most conspicuous differences between folding chairs and permanent furniture has been that folding chairs have the confronting faces of the opposite back legs parallel to one another, whereas many different kinds of permanent furniture have the back legs flaring outwardly, that is, the confronting faces of the back legs are at an acute angle to one another, the angle facing toward the rear of the chair.

It is an object of this invention to provide a folding chair which has outwardly-flaring back legs.

It is another object of the invention to provide such a chair with adapters which permit a chair to operate with folding mechanism similar to that used on chairs which formerly required parallel confronting faces for the back legs. A more particular object is to provide very simple and inexpensive adapters combined with folding mechanism of the character disclosed in my Patent #2,044,473, issued June 16, 1936.

In the preferred construction, the same adapter construction is used for both upper and lower connections of the back leg to the folding mechanism, and offsets are provided in the linkages to permit more compact folding.

Other objects, features and advantages of the invention will appear or be pointed out as the description proceeds.

In the drawing, forming a part hereof, in which like reference characters indicate corresponding parts in all the views:

FIGURE 1 is a perspective view showing a chair made in accordance with this invention;

FIGURE 2 is a side view, mostly in section, showing the folding mechanism and the operation of this mechanism for the chair shown in FIGURE 1;

FIGURE 3 is a side elevation showing the chair of FIGURE 2 when fully folded;

FIGURE 4 is a fragmentary, enlarged view showing the positions of the links when the chair is in the folded position shown in FIGURE 3; and

FIGURES 5 and 6 are greatly enlarged sectional views taken on the lines 5—5 and 6—6, respectively, of FIGURE 2.

FIGURE 1 shows a chair 10 having a back 11 supported by rear legs 12 and 14. The chair has a seat 16 and a front leg assembly 18 consisting of front legs 20 and a cross frame 22. The confronting inside faces of the back legs 12 and 14 diverge from one another toward the rear so that the planes of these faces form an acute angle opening toward the rear. The upper ends of the rear legs 12 and 14 are connected at the upper ends by the back 11 and they are connected a short distance below the chair seat 16 by a frame element 26.

FIGURE 2 shows the front leg assembly 18 connected to the seat 16 by pivots 28. There is no direct connection between the seat 16 and the back legs of the chair. A link 30 is connected with the seat 16 by a pivot 32. It should be understood that the linkage shown in FIGURE 2 is the same at both sides of the chair, but the description of one such link mechanism is sufficient for complete understanding of them both. At its other end, the link 30

is connected to a pivot 34 on an adapter 36 which is attached to the rear leg 12 by screws 38, as shown in FIGURE 5.

There is another link 40 connected to the front leg assembly 18 by a pivot 42. This link 40 is connected to the link 30 by a pivot 44. The pivot 44 is located intermediate the ends of the link 30, as shown in FIGURE 2.

A link 50 connects with an intermediate portion of the link 40 at a pivot 52; and this link 50 is connected by a pivot 54 to an adapter 56 attached to the rear leg 12 by screws 38, as shown in FIGURE 6.

When the rearward end of the seat 16 is lifted into the dotted-line position shown in FIGURE 2, the link mechanism causes the front leg assembly 18 to move inwardly toward the rear legs 12 and 14; and further upward movement of the rearward end of the seat 16 causes the parts of the chair to fold into the flat positions shown in FIGURE 3. The chair stands alone when folded.

From an inspection of FIGURE 2 it will be apparent that the chair illustrated has a simple and effective folding mechanism which can be confined to the upper portions of the legs and close to the under side of the seat. This folding linkage actually comprises two four-bar linkages. The first four-bar linkage consists of one link formed by the portion of the front leg assembly between the pivots 28 and 42. A second link 40 extends from the pivot 42 to the pivot 44. A third link of this front four-bar linkage is the portion of the link 30 between the pivots 32 and 44; and the fourth link is a portion of the seat between the pivot 32 and the pivot 28.

The second four-bar linkage consists of the portion of links 40 between pivots 44 and 52, the link 50, the portion of the rear leg between the pivots 54 and 34, and the portion of the link 30 between the pivots 34 and 44.

When the link mechanism folds, the links 50 on both sides of the chair are located outside of the links 30, and in order to have the link mechanism fold into a compact assembly, each link 30 is provided with an off-set 60, best shown in FIGURE 6, which permits the links 30 on both sides of the chair to fold rearwardly and occupy positions alongside of and inward from the links 50.

In the illustrated embodiment of the invention both of the adapters 36 and 56 are of the same construction and each one consists of a one-piece plate having one portion at an obtuse angle to the other portion. The rearward portion of each of the adapters 36 and 56, that is, the portion toward the right in FIGURES 5 and 6, extend parallel to the planes in which the various links move when the mechanism is folding and unfolding.

The forward portions of these adapters 56 and 36, that is, the portions toward the left in FIGURES 5 and 6, contact with the faces of the legs 12 and are securely fastened to the legs by the screws 38, there being at least two screws 38 in each adapter 36 and 56 so as to hold the adapters in fixed relation to the leg 12. Each adapter 36 and 56 has a cylindrical bearing portion 62 which extends into a socket in the leg and this bearing portion 62 receives and supports the inner end of the pin or pivot 34 or 54 that connects the links 30 or 50, respectively, to the adapter.

In the preferred construction, the pivots 34 and 54 are connected to the bearing portions or supports 62 by fitting into these bearing portions or supports with a press fit; but other constructions can be used, such as shoulder screws, and the constructions illustrated are merely representative of fastening means for pivotally connecting the links 30 and 50 to the adapters 36 and 56, respectively.

The preferred construction has been illustrated and described, but changes and modifications can be made, and

some features may be used in different combinations without departing from the invention as defined in the claims.

What is claimed is:

1. In a folding chair having a back leg assembly with two back legs on opposite sides of the chair and having inner faces confronting one another across the space between said back legs, a front leg assembly, a seat having a forward portion hinged to the front leg assembly and having a free rearward portion that is raised and lowered to fold and unfold the chair, and a multi-bar linkage connected to the front and rear leg assemblies and to the seat intermediate its forward and rearward portions, the improvement which comprises outwardly flaring back legs with their confronting faces diverging from one another toward the rear of the chair and at an obtuse angle to a plane extending fore-and-aft of the chair, the linkages including an upper and a lower link on each side of the chair connected with the back leg on that side of the chair, two plates attached to each leg on the surface of the leg that confronts the other leg and with each plate at a different height on the leg from the other plate, the forward portion of each plate being parallel to a portion of said surface of the leg and attached thereto, the direction of extent of the plate changing intermediate its ends and the plate having a rearward portion diverging from the surface of the leg but located entirely behind the front edge of said surface of the leg so as to be obscured from view when the leg is viewed from in front of the chair, the rearward portion of the plate being at an obtuse angle to the forward portion substantially equal to said obtuse angle of flare of the back legs, each link that is connected to a back leg of the chair having a straight forward portion substantially parallel to said plane, an intermediate portion that is off-set at the forward portion of the plate in a direction toward the surface of the leg, and a rearward portion substantially parallel to said plane and adjacent to the rearward portion of the plate, a pivot support extending from the rearward portion of each plate and into contact with the leg to which the plate is attached, a pivot extending from the pivot support on the side away from the leg, all of the pivots being parallel to one another, a different link of the linkage being connected to the rear legs by each of the pivots, and other links of said linkage connected with and operable in planes parallel to said fore-and-aft plane and connecting said upper and lower links with the front legs.

2. The folding chair described in claim 1, and in which the spacing of the plates on each leg is less than the length of the lower links, and the offsets of the links that connect with the lower pivots are different from those of the links that connect with the upper pivots whereby part of the length of the lower links can lie alongside of part of the length of the upper links when the chair is folded.

3. The folding chair described in claim 1, and in which each plate is attached to its leg by two screws extending through the forward portion of each plate and into the leg at right angles to the flaring surface to which the plate is connected, whereby forward pull of the links on the pivots urges the forward portion of the plate in a forward direction but with a component of force that tends to move the plate into firmer contact with the flaring surface of the leg and against which it is held by said screws.

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