Feb. 1, 1955 G. G. HICKOK 2,701,007

FOLDING ARMREST

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Fig. 1.

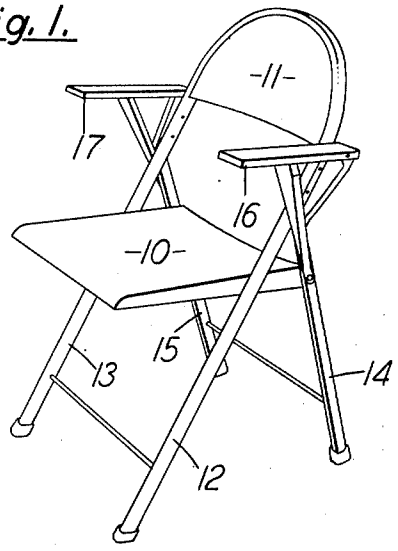


Fig. 2.

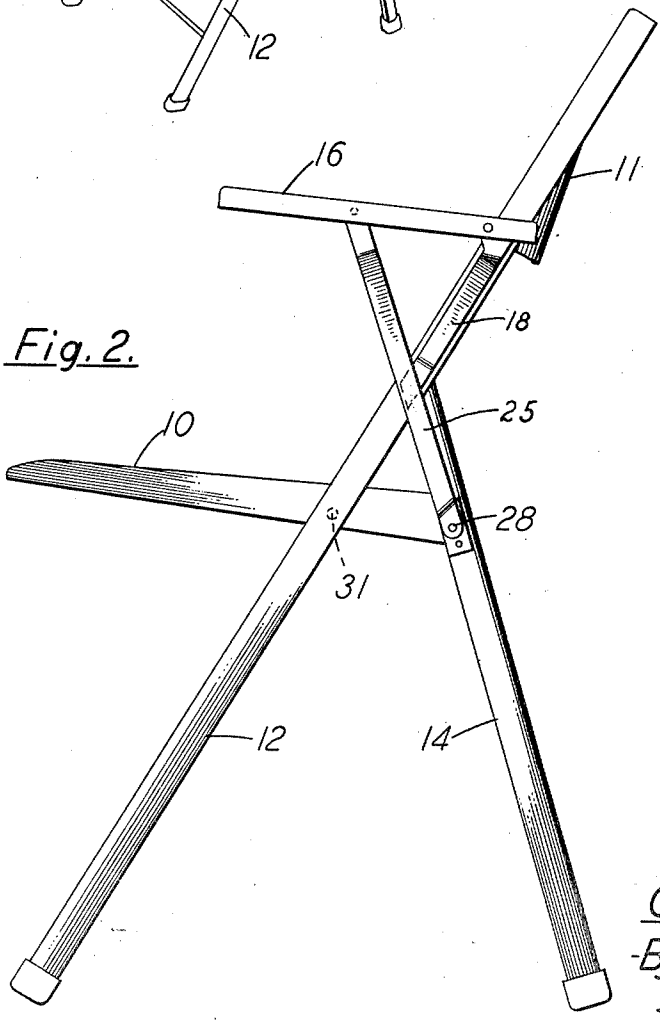
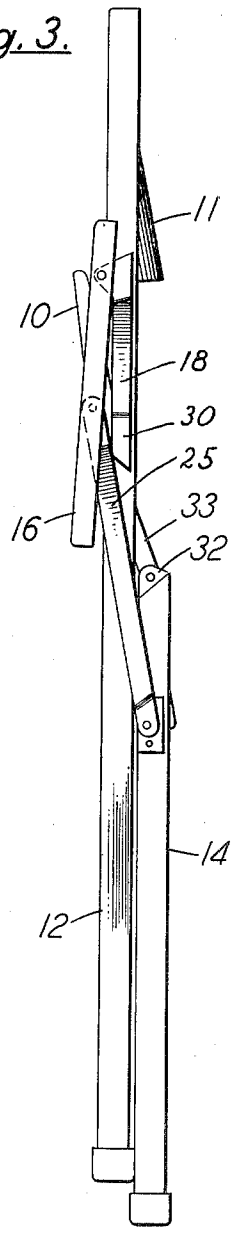


Fig. 3.



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Fig. 6.

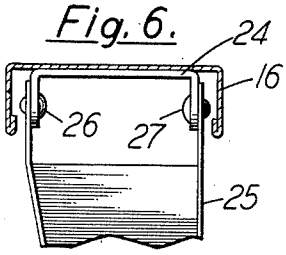


Fig. 5.

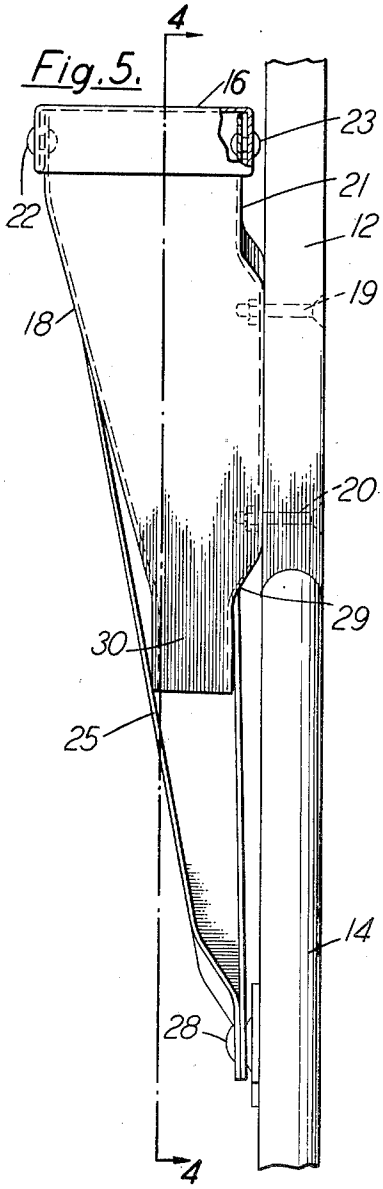
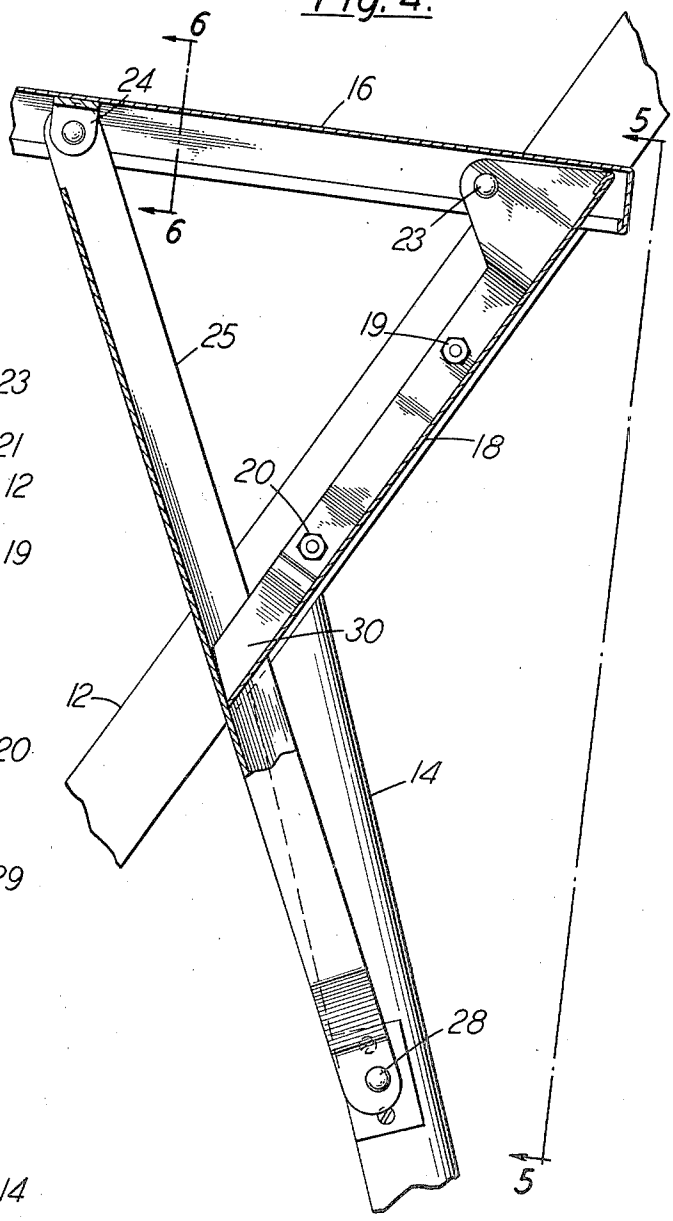


Fig. 4.



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FOLDING ARMREST

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4 Claims. (Cl. 155—145)

The present invention provides an arm rest for a folding chair. Preferably, the present invention is used in conjunction with a folding chair mechanism of the type shown and described in the Burnham Patent Number 2,568,269, but is not limited to use with that mechanism.

The superior comfort characteristics of a chair provided with adequate arm rests are well known, and the primary reason that every folding chair is not so equipped is the fact that an arm rest having adequate strength characteristics is usually sufficiently complicated, or of heavy enough structure, as to bring the cost too far above a plain chair. The tendency of an occupant to place a large portion of his weight upon the arm rest of a chair as he is entering and leaving it, coupled with the fact that a considerable degree of side load is often applied to these members, makes it necessary to devote careful attention to the strength of the arm rest. Further, it is necessary that these forces be resisted by the arm rest without a substantial amount of deflection. Even though the chair be capable of carrying a loading assigned to it, any large amount of resiliency will give the occupant a feeling of insecurity. The positioning of the arm rest must therefore be positive, and as free from deflection as possible—both vertically and laterally.

These fundamental design problems are very troublesome due to the relative movement existing between the various parts to which the folding arm mechanism is connected. It is very difficult to assure a positive positioning of the arm when the remainder of the chair is not solidly fixed together. This is particularly true with regard to lateral forces, since the vertical positioning of the arm can be accomplished through a co-planar linkage system. Stabilizing the arm against side forces is another matter, however, since there is no practical way to position a diagonal brace for this purpose. The resistance of the arm against lateral displacement is largely similar to the action of a cantilever beam. Having in mind that the arms and operating linkage are pivotally connected, it is understandable why adequate lateral rigidity in an arm is difficult to incorporate without the use of excessively heavy journal and bearing structures. The present invention provides for the lateral stiffening of an arm without relying upon the alignment of the pivot bearings to any great extent. In this mechanism, bearings function entirely as pivot points, and are not utilized to position the arm in a plane parallel to the axis of the pivot.

In the preferred form of the present invention, an arm rest is pivotally connected to the front leg assembly of the chair, and a link extends between a forward point on the arm rest and a point upon the rear leg assembly. During the folding of the chair, a considerable amount of movement takes place on the part of this link in a direction parallel to the front leg. The normal position of the link is transverse to the front leg, and the movement along the front leg permits the link at an intermediate point to engage and disengage a fixed abutment secured to the front leg assembly. A very positive coupling action takes place at this engagement; and with the chair in the fully erected position, the link is therefore secured to the rear legs (by the pivot connection) and fixed with respect to the front legs at the engaged abutment. The link member actually becomes a rigidly mounted cantilever beam, the outer end of it forming the pivot connection with the outer end of the arm rest. This link becomes the primary stiffening factor enabling the arm to resist side loads. A preferred form of the cross-section of the supporting link is provided by the present invention, and which naturally facilitates the engagement with the fixed abutment.

The several features of the present invention will be discussed in detail through an analysis of the particular embodiments illustrated in the accompanying drawings. Referring to the drawings:

Figure 1 is a perspective view showing a chair embodying the present invention, with the chair in the fully erected position.

Figure 2 is a side elevation showing the chair illustrated in Figure 1, with the chair in the fully erected position.

Figure 3 is a view of the chair illustrated in Figures 1 and 2, but in the folded position.

Figure 4 shows an enlarged section taken through the folding arm mechanism.

Figure 5 is a view taken on the plane **5—5** of Figure 4. (Figure 5 also indicates more clearly the plane of the view of Figure 4.)

Figure 6 is a section taken on the plane **6—6** of Figure 4.

Referring to Figure 1, a folding chair is shown having a seat **10**, a back **11**, front legs **12** and **13**, and rear legs **14** and **15**. Arm rests **16** and **17** are positioned by the mechanism to be discussed hereinafter.

Referring particularly to Figures 4 and 5, a bracket **18** is shown firmly secured to the front leg **12** by the bolts **19** and **20**. Similar structure is provided on opposite sides of the chair. The upper end of the bracket **18** is provided with an offset portion **21** establishing a spaced relationship between the bracket and the leg **12** in this area. The arm-rest **16** is pivotally connected to the upper portion of the bracket **18** by the rivets **22** and **23**.

A U-shaped bracket **24** is fixed with respect to the arm rest **16** (see Figure 6), and the arms of this member are pivotally connected to the link **25** by the rivets **26** and **27**. The lower end of the link **25** is pivotally connected to the rear leg **14** at **28**.

The lower end of the bracket **18** is provided with an offset indicated at **29** establishing a cantilever projection **30** at this point having the primary function of providing a firm abutment which the link **25** engages as the chair approaches the fully erected position. The cross-section of the link **25** is generally channel-shaped. The form of the depending projection **30** on the bracket **18** is such as to closely engage the walls of this channel and thereby effect a firm lateral positioning of the link **25** at this point. It will be noted that the link **25** generally maintains a transverse relationship with the front leg **12**, and that the folding movement of the chair causes the link to move along the front leg while generally maintaining this transverse position. This movement causes the channel-shaped cross-section of the link **25** to engage and disengage itself from the depending projection **30**. A comparison of Figures 3 and 4 will indicate the extremes of the movement of the link **25** between the folded and erected chair positions. The drawings referred to herein illustrate a chair of the type shown in the Burnham Patent Number 2,568,269. In this chair, the seat **10** is pivotally connected to the front legs as indicated at **31** in Figure 2, and to the rear legs substantially coaxially with the pivot connection **28**. The upper end **32** of the rear legs is connected to the front legs by the link **33**.

The particular embodiments shown in the accompanying drawings and disussed herein are for illustrative purposes only, and are not to be considered as a limitation on the scope of the appended claims. In these claims, it is my intention to claim the entire invention except as I am limited by the prior art.

I claim:

1. In a folding chair having front legs, rear legs, a seat pivotally connected to said front and rear legs, and a link connecting the upper portion of each of said rear legs to the front leg associated therewith, said links extending upwardly along said front legs from the points of connection thereto when said chair is in erected condition, folding arm-rest means comprising: opposite brackets fixed with respect to said front legs respectively and each having a downwardly-extending projection at

the lower end thereof spaced from said front legs; opposite arm-rest members pivotally connected respectively to said brackets; and arm-rest supporting links pivotally connected respectively to said arm-rest members at points in front of said front legs and to said rear legs, said arm-rest supporting links having an upwardly-opening channel-shaped cross section adapted to engage said projections respectively with said chair in erected condition.

2. In a folding chair having front legs, rear legs, a seat pivotally connected to said front and rear legs, and a link connecting the upper portion of each of said rear legs to the front leg associated therewith, said links extending upwardly along said front legs from the points of connection thereto when said chair is in erected condition, folding arm-rest means comprising: opposite brackets fixed with respect to said front legs respectively; opposite arm-rest members pivotally mounted for rotation on axes fixed with respect to said front legs; and arm-rest supporting links pivotally connected respectively to said arm-rest members at points in front of said front legs and to said rear legs, said arm-rest supporting links being adapted to engage said brackets respectively at an intermediate point on said arm-rest supporting links with said chair in erected condition.

3. In a folding chair having front legs, rear legs, and a seat pivotally connected to said front and rear legs, folding arm-rest means comprising: opposite brackets fixed with respect to said front legs respectively; opposite

arm-rest members pivotally mounted for rotation on axes fixed with respect to said front legs; and arm-rest supporting links pivotally connected respectively to said arm members at points in front of said front legs and to said rear legs, said links being adapted to engage said brackets respectively at an intermediate point on said links with said chair in erected condition.

4. In a folding chair having front legs, rear legs, and a seat pivotally connected to said front and rear legs, folding arm-rest means comprising: a bracket fixed with respect to one of said front legs; an arm-rest member pivotally mounted for rotation on an axis fixed with respect to said one of said front legs; and an arm-rest supporting link pivotally connected to said arm-rest member at a point in front of said one front leg and to one of said rear legs, said link being adapted to engage said bracket at an intermediate point on said link with said chair in erected condition.

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