June 21, 1955 E. J. TIDCOMBE 2,711,211

RESILIENTLY MOUNTED BACK REST

Filed April 16, 1952 2 Sheets-Sheet 1

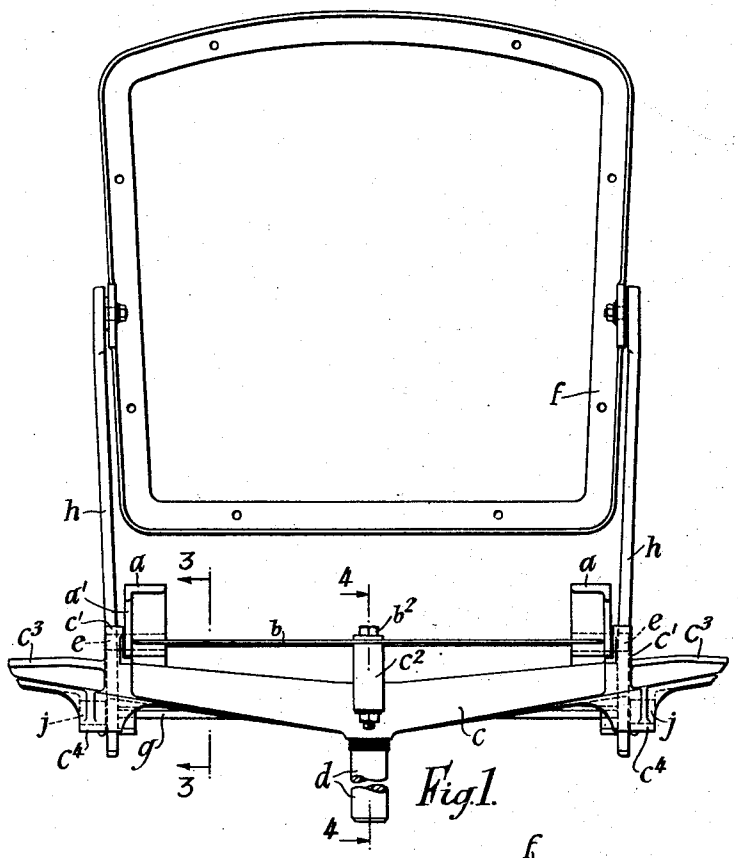


Fig. 1.

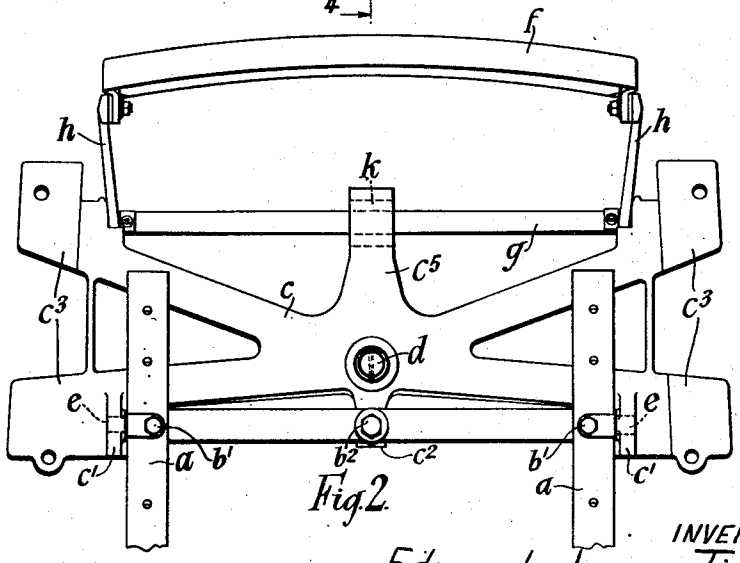


Fig. 2.

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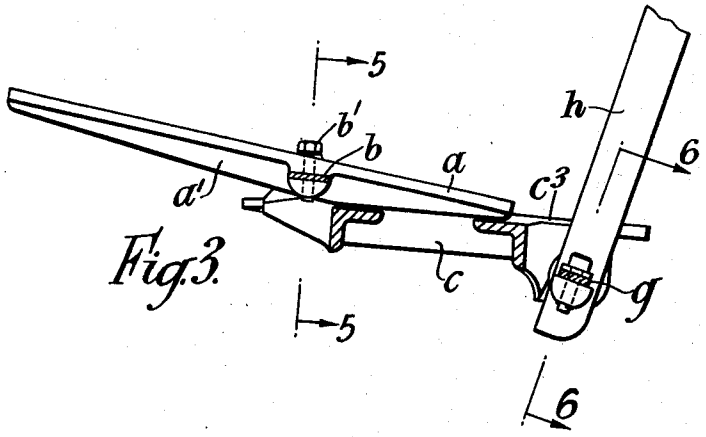


Fig.3.

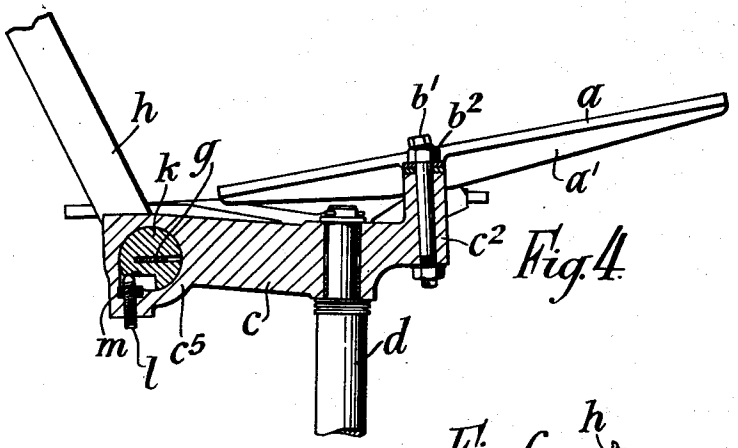


Fig.4.

Fig.5.

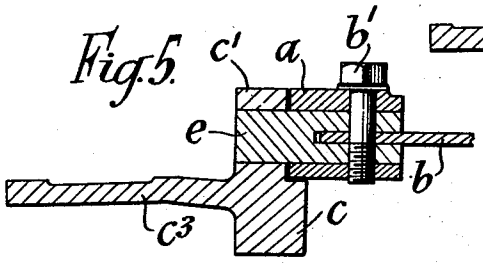
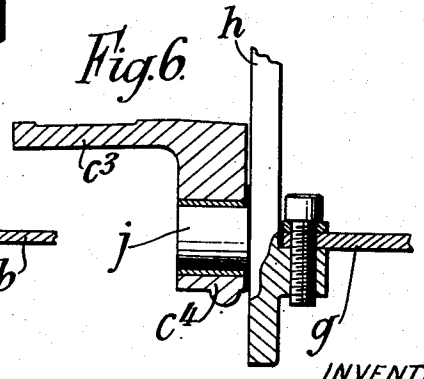


Fig.6.



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RESILIENTLY MOUNTED BACK REST

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Application April 16, 1952, Serial No. 282,543

5 Claims. (Cl. 155—164)

This invention has reference to improvements connected with chair structures and particularly to improvements in chair part supports, such as seat carrying members and back rest carrying means. It has for its primary object to incorporate in chair structures torsion strip means which will provide resilient couplings between seat carrying members and chair frames, and between back rest carrying means and chair frames, which couplings are of a simple, sturdy and effective character.

The invention consists of a resilient coupling means for association with a rockable chair seat and/or back, characterised by said means incorporating a torsion member anchored at the ends to the frame of the chair seat or back rest and anchored about its centre to the seat supporting cradle whereby a limited rocking motion is permitted to the seat and/or the back rest frame.

A preferred means of carrying the present invention into practice will now be described with reference to the accompanying drawings, in which:

Fig. 1 is a front elevation of a skeleton chair frame removed from its pedestal mounting.

Fig. 2 is a plan of Fig. 1.

Fig. 3 is a part sectional side elevation on line **3—3** of Fig. 1 illustrating the connection of the torsion strips at their ends to the seat cradle and the back rest arms respectively.

Fig. 4 is a part sectional side elevation on line **4—4** of Fig. 1 illustrating the connection of the torsion strips at their centres to the seat cradle.

Fig. 5 is a detailed sectional elevation of the trunnion mounting for the seat taken on the line **5—5** of Fig. 3.

Fig. 6 is a detailed sectional elevation of the trunnion mounting of the back rest taken on line **6—6** of Fig. 3.

The drawings illustrate the application of a resilient coupling between chair parts, such as a seat or back rest support, and the chair framework which is mounted on or forms part of the leg or pedestal structure of the chair (not shown). The seat (not shown) is adapted to be rigidly mounted at either side on a pair of angle brackets *a* arranged in parallel to which brackets the ends of a torsion strip *b* are bolted by means of the bolts b^1. The centre of the strip is bolted by means of a bolt b^2 to the central section of a chair frame or cradle *c* which forms the support for the seat, the cradle being rotatably mounted on a vertical spindle *d* mounted in a legged pedestal in known manner; on the lower ends of the legs castors are usually provided.

The torsion strip connection *b* admits of a controlled rocking motion of the seat on the cradle *c* rotatably mounted on the supporting spindle *d*. Secured to the outer vertically disposed flange a^1 of each angle bracket *a* is a trunnion *e*, a pair of aligned trunnions incorporating the axis about which the seat can be rocked against the resistance of the torsion strip *b*.

The cradle *c* is provided at each side with upstanding bearing bosses c^1 which incorporate circular apertures adapted to receive the projecting ends of the trunnions *e*

thus admitting of a rocking motion of the seat through the brackets *a* in the cradle *c*. This cradle *c* at the point at which the centre of the torsion strip *b* is connected is formed with a raised boss or lug c^2 which is located in forward proximity to the vertical axis of the spindle *d*. The flat topped side extensions c^3 of the cradle provide a rigid support for the arms of the chair (not shown) to ensure the correct relationship of the arms to the seat.

When the torsion spring mounting is applied as the resilient coupling between the pivotal back rest *f* and the cradle *c* which forms part of the chair frame the torsion strip which is designated *g* is connected at its ends to the lower end of the arms of the back rest *f*. The pair of arms *h* are disposed in a vertical plane and at their upper end provide the support for the pivotal back rest *f* while the lower end of the arms *h* (see Fig. 6) are provided with outwardly directed trunnions *j* which are rotatably accommodated within bearing bosses c^4 formed in the cradle *c*. The centre of the torsion strip *g* is anchored to a rearwardly directed extension c^5 forming part of the said cradle, the form of anchorage (see Fig. 4) comprising a slotted cylindrical adjustable clamping block *k* within which slot the central part of the torsion strip *g* is located. The block *k* is held in the desired position by means of a set-screw *l* rotatably mounted within a captive nut *m* which in turn is mounted in the extension c^5 of the cradle. It will be appreciated with particular reference to Fig. 4 that an adjustment of the set-screw *l* will effect a rotational motion of the block *k* and therefore provide an adjustment of the tension of the strip *g* imposed by the occupant and this adjustment can be utilised to vary the angular position of the arms *h* which are mounted on the trunnions *j*.

It is to be appreciated that the drawings only show the skeleton framework constituting the upper part of the chair frame which is adapted normally to be rotatably mounted on a pedestal support and that this skelton framework is intended to be upholstered by means of a seat which is fixed to the upper faces of the angle brackets *a*. Side arms may be affixed to the top of the extensions c^3 of the cradle *c* and an upholstered pad may be affixed to the front of the pivotally mounted back rest plate *f*, thus providing a completely upholstered arm chair.

Minor modifications may be made in the details of the aforesaid mechanism according to the type of chair or seat with which the resilient coupling means comprising essentially the torsion strips are incorporated.

I claim:

1. A chair structure comprising, in combination, a chair frame, means for supporting said chair frame for swiveling movement about a substantially vertical axis, back rest carrying means, pivot means connecting said back rest carrying means to said chair frame for rocking movement about a horizontal axis, and a resilient flat strip fixed at its center to said chair frame and at its ends to said back rest carrying means for torsionally resisting such rocking movement.

2. A chair structure comprising, in combination, a chair frame, back rest carrying means, pivot means connecting said back rest carrying means to said chair frame for rocking movement about a substantially horizontal axis, a block mounted for limited rotation in said chair frame, and a resilient flat strip fixed at longitudinally spaced points to said back rest carrying means and at an intermediate part to said block for torsionally resisting such rocking movement.

3. A chair structure comprising, in combination, a chair frame, means for supporting said chair frame for swiveling movement about a substantially vertical axis, a chair part support, pivot means connecting said chair

part to said chair frame for rocking movement about a substantially horizontal axis, a block mounted for limited rotation in said chair frame, and a resilient straight member fixed at its center to said block and at its ends to said chair part support for torsionally resisting such rocking movement.

4. A chair structure comprising, in combination, a chair frame, means for supporting said chair frame for swiveling movement about a substantially vertical axis, back rest supporting means, pivot means connecting said back rest supporting means to said chair frame for rocking movement about a substantially horizontal axis and a resilient flat strip for torsionally resisting such rocking movement of such back rest supporting means, such strip being fixed at its center to said chair frame and at its ends to said back rest supporting means.

5. A chair structure comprising, in combination, a chair frame, a chair part support, pivot means connecting

said chair part support to said chair frame for rocking movement about a substantially horizontal axis, and a resilient straight member fixed at longitudinally spaced points to said chair part support and at an intermediate point to said chair frame for torsionally resisting such rocking movement.

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