

July 7, 1953

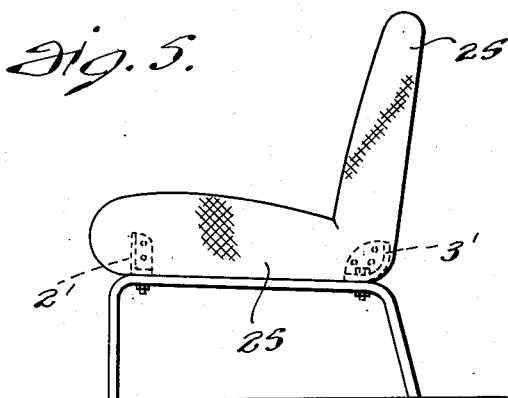
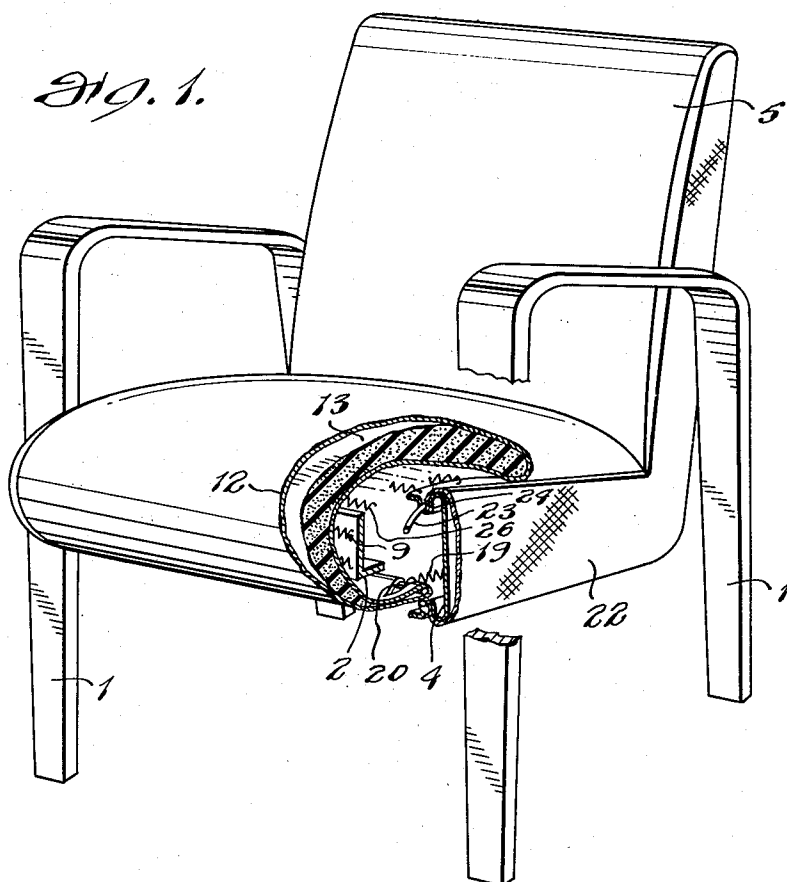
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2,644,508

RESILIENT SEATING SURFACE FOR CHAIRS

Filed June 11, 1951

3 Sheets-Sheet 1



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RESILIENT SEATING SURFACE FOR CHAIRS

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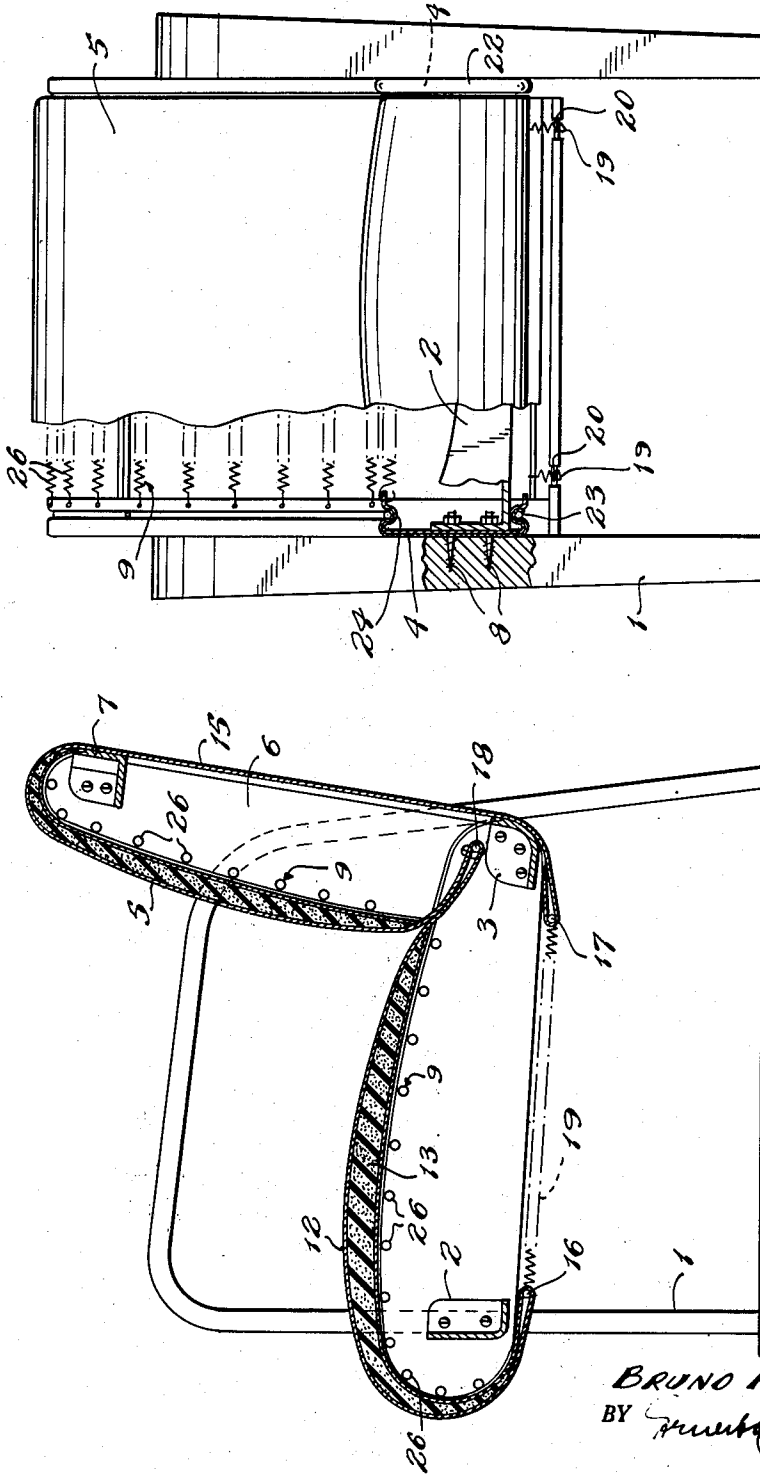


Fig. 3.

Fig. 2.

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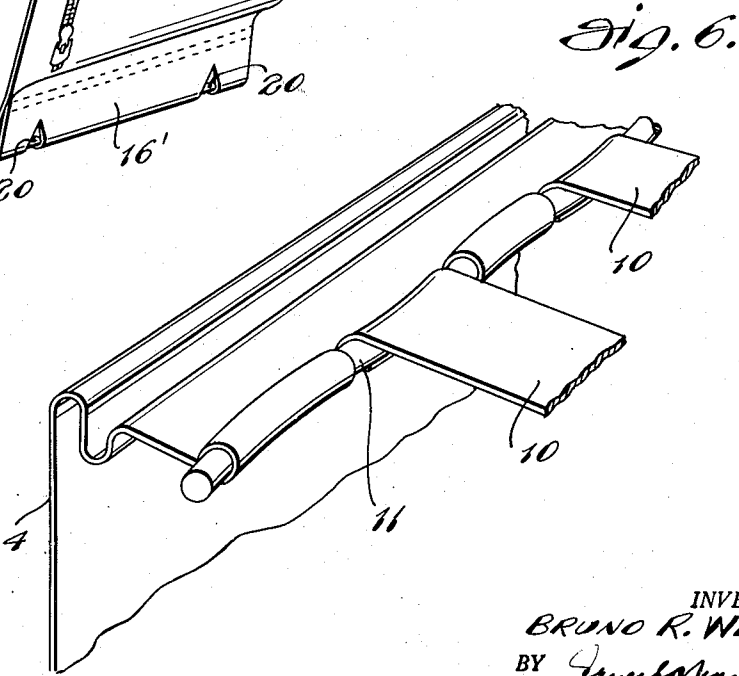
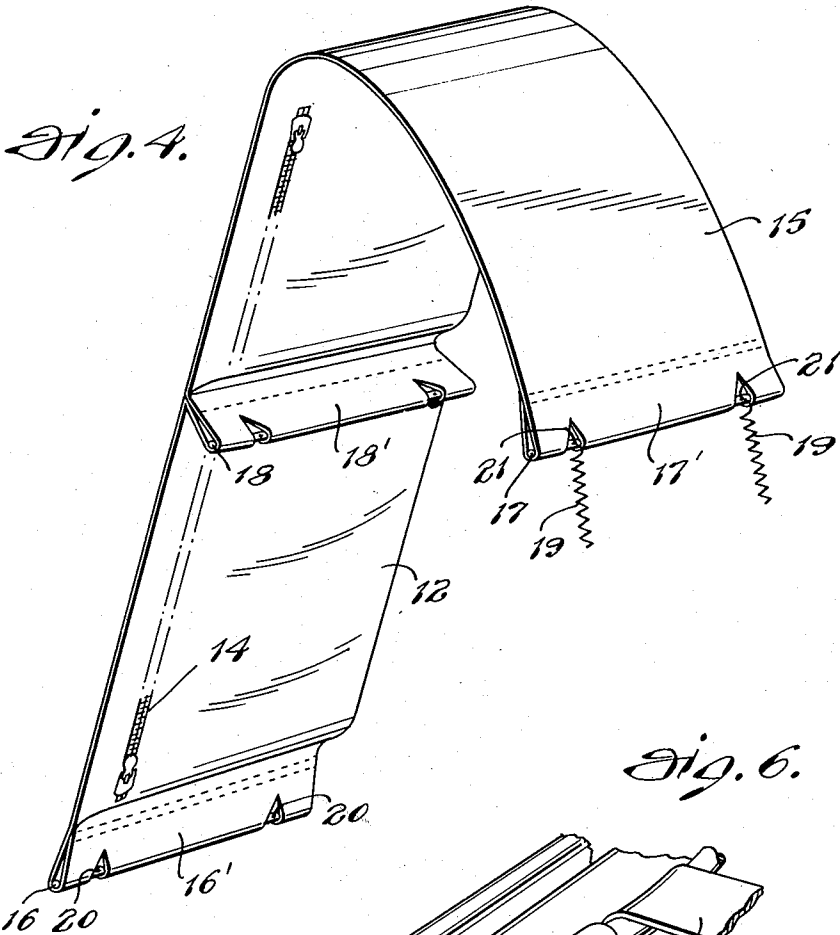
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RESILIENT SEATING SURFACE FOR CHAIRS

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3 Sheets-Sheet 3



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RESILIENT SEATING SURFACE FOR CHAIRS

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In France July 10, 1950

5 Claims. (Cl. 155—179)

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The invention relates to chairs, and it concerns particularly those chairs with a back, and also armchairs.

It is one object of the present invention to arrange the seats in such a manner that they satisfy better than heretofore the various requirements encountered in practice.

It is another object of the present invention to arrange the seats of the type in question in such a manner that their superstructure is removable, being in particular held in place by elastic means, so that it is possible to change or to clean readily such seat superstructure, just like it is done at the present time for seat covers.

It is still another object of the present invention to arrange the frame of the aforementioned type of seats by assembling parts which are readily disassembled, in particular by means of bolts, the said seats comprising for example two lateral uprights forming legs and elbow-rests, as well as two cross-members connecting the said uprights together and with parts forming the sides of the seat proper and of the back.

It is yet another object of the present invention to make the super-structure of the said type seats by means of a casing made of fabric or of another flexible material, filled with a compact material having a certain degree of resiliency or elasticity, in particular, sponge rubber.

It is a further object of the present invention to provide a covering on the sides of the said seats, this covering being preferably held in place by an elastic connection running along the said sides.

It is still a further object of the present invention to provide means forming the suspension of the said seats which consist of metal or other type blades or plates, attached to cables which are preferably elastic.

With these and other objects in view which will become apparent in the following detailed description, the present invention will be clearly understood in connection with the accompanying drawings, in which:

Figure 1 is a perspective front view of the chair, parts being broken away for the purpose of better demonstration;

Fig. 2 is a sectional side elevation;

Fig. 3 is a front elevation, partly in section;

Fig. 4 is a perspective view of the removable superstructure of the chair;

Fig. 5 is a side elevation of a second embodiment of the chair; and

Fig. 6 is a diagrammatic perspective view of another embodiment of the seat suspension.

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In the known embodiments of chairs in which the fabric or cover of the armchair is integral with the substructure of the latter, the repair operations, when the fabric becomes worn or fades, are usually lengthy or delicate, forcing the user to deprive himself temporarily of the seat and to entrust it in the hands of an expert.

It is known, however, that recourse is often had to protective covers in addition to the fabric or cover of the chair, which have a more or less unsightly appearance and which can cover the seats only temporarily.

In order to overcome these difficulties, the seat or armchair is covered, in an essentially removable manner, by a superstructure which comprises permanently the visible face of the seat. As this superstructure is removable, it can be given out for cleaning and be immediately and easily replaced by another ensemble of the same type, so that it is possible to assure the continuous operation or use of the chair.

The present structure in accordance with the present invention, may be applied either by taking an existing seat and modifying it in such a way as to make possible the fitting thereto of a superstructure of the aforementioned type, using means to fasten into place such as those described below; or better still, by making a seat comprising a frame and a suitable substructure, having preferably an elastic suspension, on which it is possible to attach in a removable way the superstructure of the present invention.

Thus, if an armchair consists of a seat proper, of a back and of elbow-rests, its frame comprises a number of parts which may be made of wood, of metal (particularly tubular-shaped members having a round, oval, triangular, etc. section), of plastic material or any other suitable material which various materials may be used simultaneously.

The chair may comprise a frame consisting of two inverted U-shaped members 1, the base of the U forming an elbow-rest, while the arms of the U form the legs of the chair. The preferably parallel disposed U-shaped members 1 are connected by two cross-members 2, 3, which are adapted to support the seat proper. End plates 4 form the side boundaries of the seat, and a back 5, stationary or with variable reclining, consisting essentially, for example, of side plates 6 which are connected by at least one cross-member 7. The back shown in Figs. 1 to 3 is stationary in which case the side plates 6, at their basis, are assembled onto the end-plates 4 and the cross-member 3.

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The assembling means between the various parts, so as to assure their detachability, may be achieved in any suitable manner, such as, for example, by means of screw bolts 8 (Figs. 2 and 3).

Disposed over the aforementioned frame, is an elastic suspension 9, preferably both for the seat and for the back, which suspension can be of any suitable type, consisting for instance of a coil spring assembly or of other elastic members butting at their ends against the end plates 4, side plates 6, or any other members of the frame (Figs. 1 to 3).

It would also be possible, in accordance with an arrangement, susceptible eventually of being used separately, to constitute this suspension by means of thin blades (plates) 10, preferably metal plates (Fig. 6), attached at their ends to rod members 11 which are preferably flexible or resilient, for example to cables made of rubber or other material, made integral with or secured to the end-plates 4. The latter are arranged in a suitable manner for this purpose.

Regardless of which embodiment of the chair frame is used, the said suspension 9 shall be capable of supporting, either directly, the superstructure which is described below, or by the insertion of any member or intermediate layer which shall receive the action of such suspension.

Referring now to the superstructure of the present invention, which is adapted to cover the suspension and to form the normal covering of the seat, it is arranged in such a manner that it has a certain rigidity or stress not easily achieved with the conventional seat cover, and that, in this manner, the formation of folds or wrinkles is prevented.

Thus, according to an advantageous arrangement, also susceptible of being used separately, the aforementioned superstructure consists of a cover made of fabric or of any flexible material, to which may be attached at least on the portions of its length intended to be fitted onto the seat and the back, a padding material of a compact nature and yet resilient or elastic, for example, a layer of sponge rubber, of a constant or variable thickness.

An assembly of this type is shown in Figs. 2 and 4, comprising the cover 12 with the sponge rubber inside padding 13 and a zipper 14, making it possible to remove the padding, when desired, particularly for the purpose of cleaning the cover 12. The assembly is shown with two paddings corresponding to the seat and to the back, and a non-padded portion 15, placed behind the back of the seat, as explained in more detail below. In the case a padding is provided, the cover necessarily consists of double material, the padding being disposed between the two sheets. If however, the padding is dispensed with, one single sheet of material is required only.

In order to hold in place the superstructure, various means can be resorted to; for example, recourse can be had to tensioning means capable of acting in various directions.

The tensioning means for the superstructure are designed to exert a tension at least in the longitudinal direction, transversely to the cross-members 2 and 3. The superstructure shall preferably be of a sufficient length so that when the latter has been placed to cover the seat, the back and the rear portion of the back, its ends are disposed under the seat. It is to be understood however that the tension could also be exerted in the crosswise direction.

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The tensioning means for the superstructure are also designed to exert a tension which tends to cause the said superstructure to engage at the line of separation between the seat and the back.

For this purpose, it will be advantageous to attach to the superstructure tensioning bars and in particular the bars 16 and 17 at the ends, and the bar 18 for the aforementioned line of separation, which bars shall be subjected to the action of the above mentioned tensioning means and shall distribute such action over the entire superstructure.

These tensioning bars 16, 17, and 18 which can be made of a flexible or of a rigid material, are adapted to be connected to the cover 12 in any suitable manner, and they shall be equipped with means for attaching the elastic means.

The elastic means can be arranged in any suitable manner, possibly in an adjustable manner, and may comprise, in particular as shown in Figs. 2 and 3, coil springs 19 the ends of which are attached to the bars 16 and 17, respectively, at the bottom of the seat, by means of openings 20 and 21, provided in the respective bars 16 and 17. The three bars 16, 17 and 18 are disposed in loops 16', 17' and 18', respectively formed by the cover material.

As to the center tensioning bar 18 intended to penetrate into the substructure at the junction between the seat and the back, such bar may, for example, either be attached directly to the cross-member 3 or to any members connected to the cross-member, as shown in Fig. 2, or be subjected itself to an elastic pull or tension.

The above described superstructure can be advantageously supplemented, in particular when the side-plates 4 are made of metal and assembled together, by a covering of the side-plates, which covering may consist of a piece 22 of fabric or of any other material, the edges of which are held against the corresponding edges of the said side-plates 4.

To assure an easy assembling, it is advantageous, as shown, to effect this attachment by means of an elastic cord 23 running along the above-mentioned side-plates 4, which are provided for this purpose with a groove 24 along their entire periphery and designed to accommodate the said cord.

The piece of fabric or of other material 22, applied on the side-plates 4 and end plates 6 makes it possible to impart to the latter a perfectly continuous appearance.

There are cases, however, when the cover 22 is unnecessary; such is the case, for example, as illustrated on Fig. 5 in which the two side-plates 4, and end plates 6 are replaced by a single side 25, for example of wood. The chair shown in Fig. 5 relates to a seat without elbow-rests, this being shown only by way of example.

The cover, as designed in accordance with the present invention, may easily be applied to the substructure of the frame by laying the cover on the suspension, by attaching the center tensioning bar 18 and by connecting the coil springs 19 to the end bars 16 and 17, respectively.

When it becomes necessary to clean or to replace the above-mentioned superstructure, the removal of the cover 12 is achieved in the same easy manner, namely by disconnecting the coil springs 19.

The structure of the present invention brings about numerous advantages over the conventional chairs and, in particular, it permits of keeping the chair continuously in use, since the

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cleaning of the cover 12 may be done without removing the chair to the upholsterer. Despite this advantage, the present structure provides a simple construction, since the entire chair is made of a small number of standard parts, which permit of economical manufacture.

It is also an essential feature of the present invention to provide, as stated above an elastic suspension 9 which comprises a plurality of coil springs 26 extending crosswise between the end plates 4 and side plates 6, respectively. The end plates 4 are preferably of oval shape in the front thereof, so that the front support of the seat comprises a number of coil springs 26 or other suitable elastic means instead of providing the conventional solid front bar of the chair frame.

While I have disclosed several embodiments of the present invention, it is to be understood, however, that these embodiments are given by example only and not in a limiting sense, the scope of the invention being determined by the objects and the claims.

I claim:

1. A chair comprising a sub-structure and a super-structure, said sub-structure including a side plate disposed at each side of the seat, and resilient members connecting said side plates, said resilient members forming a base for the seat of the chair, an additional side plate disposed at each side of the back and additional resilient members connecting said additional side plates to form the base for the back of the chair, said first mentioned side plates forming about a right angle to said second mentioned side plates, and said super-structure comprising a longitudinal sheet of material removably disposed over the said substructure, a first portion of said sheet material covering the seat of said chair, a second portion of said sheet material covering the front face of the back of the chair, means for retaining the adjacent parts of the said first and second portions between the seat and the back of the chair, and a third portion of said sheet material covering the back face of the back of said chair, and resilient members disposed in longitudinal direction below the seat of the chair and connecting the oppositely disposed ends of the said sheet of material.

2. The chair, as set forth in claim 1, in which said first and second portions of said sheet material comprise two layers, and a resilient member is disposed between the said layers.

3. A chair comprising a sub-structure and a super-structure, said sub-structure including a side plate disposed at each side of the seat and a plurality of coils extending crosswise and connecting said side plates, said coils forming a base for the seat of the chair, an additional side plate disposed at each side of the back and a plurality of additional coils extending crosswise and connecting said additional side plates

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to form the base for the back of the chair, said first mentioned side plates forming about a right angle to said second mentioned side plates and said super-structure comprising a longitudinal sheet of material removably disposed over the said sub-structure, a first portion of said sheet material covering the seat of the chair, a second portion of said material covering the front face of the back of the chair, a loop formed by said material and disposed between the seat of the back of the chair, a rod inserted into said loop, means for removably securing said rod to the sub-structure of the chair, and a third portion of said sheet material covering the back face of the back of said chair, the ends of the longitudinal sheet of material forming loops which are disposed below the seat of said chair, each of said last mentioned loops having a rod disposed crosswise and a plurality of coil springs, the ends of each of said coil springs being removably secured to said rods and tending to retain said sheet material in stressed position when mounted on the sub-structure of the chair.

4. The chair, as set forth in claim 3 in which said first and second portions of the sheet material comprise double layers, and a sponge rubber layer disposed between said two layers of the sheet material.

5. In a chair, including a seat, a sub-structure comprising a side plate disposed at each side of the chair, front and rear cross members connecting the said side plates, resilient members disposed crosswise between the said side plates along the upper and front ends of the latter and connecting the same to form a resilient base for the top and the front of the seat, the said front cross member being disposed spaced apart from the front end and spaced apart and behind the said resilient members at the front end of the said chair, so that the said seat has at its top face as well as at its front end resilient support.

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