Sept. 6, 1966 W. I. SMITH 3,271,076

SEATING CONSTRUCTION

Filed March 26, 1965

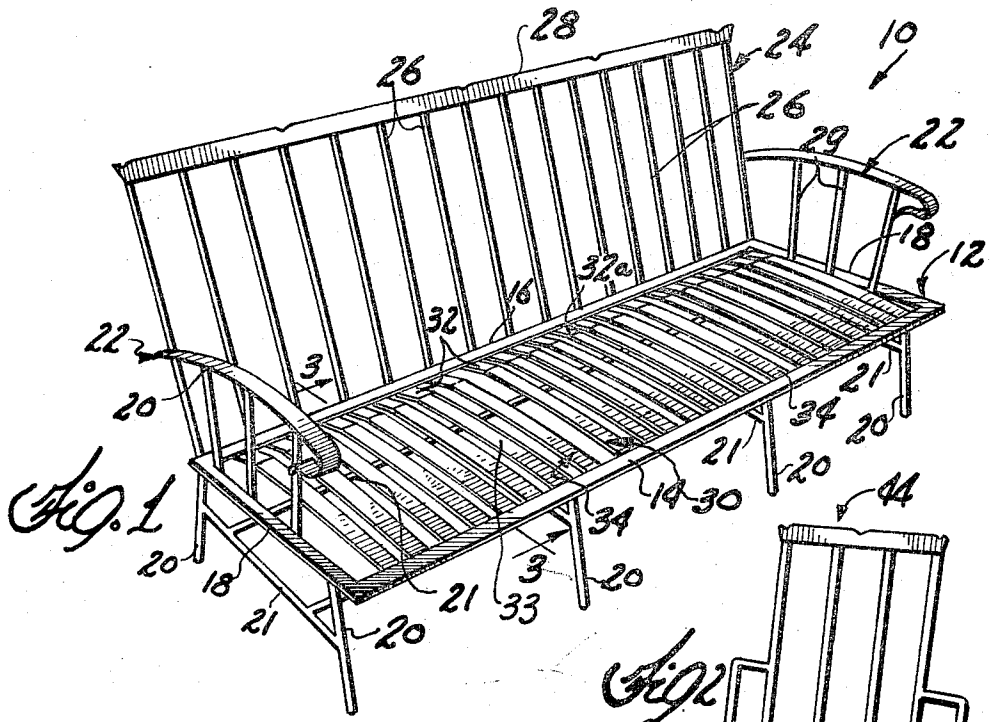


Fig. 1

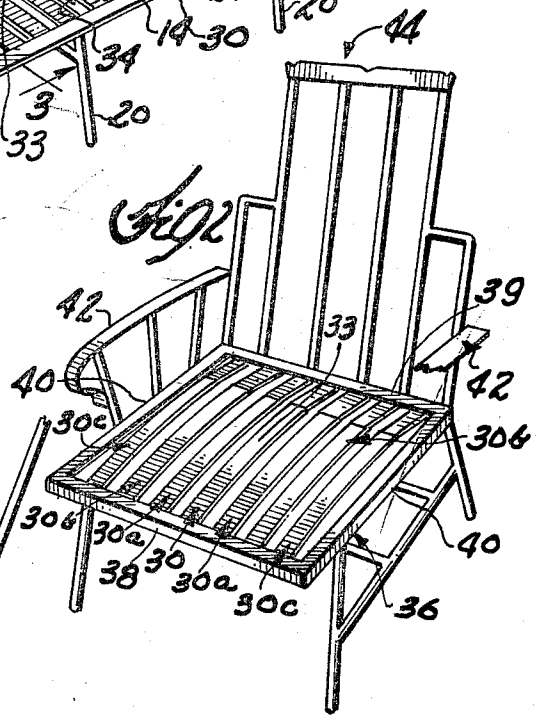


Fig. 2

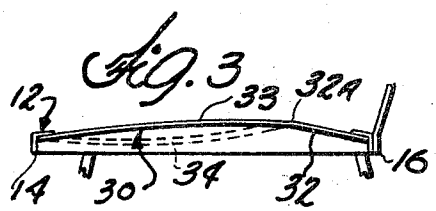


Fig. 3

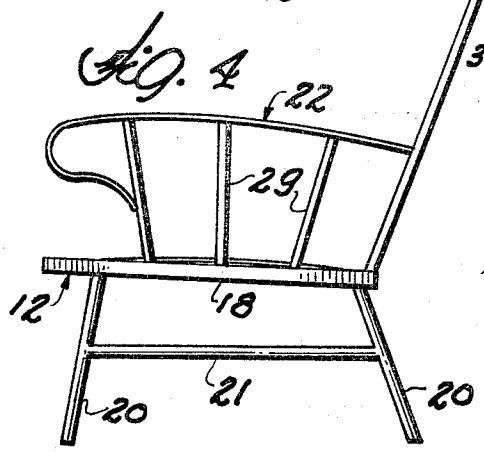


Fig. 4

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United States Patent Office 3,271,076 Patented Sept. 6, 1966

3,271,076

SEATING CONSTRUCTION

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Filed Mar. 26, 1965, Ser. No. 443,020
8 Claims. (Cl. 297—445)

This invention relates to improvements in seating constructions and more particularly relates to improvements in the resilient flat spring supporting means or base used in the seats of furniture.

A variety of resilient spring supporting devices are used in the construction of furniture including both coil and flat springs. The use of flat leaf type springs as resilient supports for cushions is an economical expedient with the further advantage that the structure is relatively compact as compared to the coil spring type of structure.

One of the objects of the present invention is to provide an improved flat spring seating construction which furnishes a resilient seating support.

Another object is the provision of an improved flat spring seating construction which provides individual spring movement in a resilient cushion support structure.

Another object is the provision of an improved flat spring seating construction which is durable and easily repaired.

A further object is the provision of an improved flat spring seat construction which keeps the rear portions of an overlying cushion relatively fixed with respect to the back support, but permits flexing in the forward portion of the seat.

A still further object is the provision of a flat spring seat construction and cushion support which permits the installation of controlled gradations of resilience within the seat structure.

For a more complete understanding of the present invention, reference is made to the attached drawings, in which

FIGURE 1 is a perspective view of a patio settee or sofa embodying the seat construction of the present invention;

FIG. 2 is a perspective view of a chair utilizing an embodiment of the present invention;

FIG. 3 is a vertical partial sectional view of the seat construction taken along the lines 3—3 of FIG. 1, and showing the flat spring means in the unstressed and flexed or stressed positions;

FIG. 4 is a side view of the settee of FIG. 1.

In FIG. 1 there is illustrated a patio settee or couch **10** comprising a rectangular seat frame **12** having a front member **14**, rear member **16** and side members **18**. In the cross sectional view of FIG. 3 it may be seen that these members forming the seat frame **12** are constructed of angle iron, although other suitable structural shapes may be used. A plurality of floor engaging and supporting members or legs **20** are fixed to the seat frame **12**. A number of cross bracing members **21** are also included. Arm supporting means **22** are affixed to the side members **18** of the frame **12**, as well as to the back support. The back support **24** shown comprises a plurality of metal rods **26** rising from the rear frame member **16** and interconnected by top rail **28**. Similar rod supports **29** appear in the arm support **22**. A plurality of resilient spring support members **30** are disposed between the front **14** and rear **16** members of the seat frame **12**. The members **30** are in the form of flat strips. These are disposed in a generally parallel and spaced relationship to each other and to the end members **18** of the seat **12**. As shown in the drawing, each of the resilient members **30** is comprised of two sectors, one of which is a

relatively rigid sector **32** which extends at a slight angle from the rear member **16** forwardly and upwardly, particularly as shown in FIG. 3, to an apex line **32*a*** and from that point or line defining a second sector **33** arching forwardly and downwardly to the front member **14**. Thus the apex line of each spring member is slightly elevated above the plane defined by the seat frame members **14**, **16** and **18**.

As shown in the partial sectional view of FIG. 3, the relatively nonflexing rigid sector **32** constitutes a rather minor proportion of the length of the resilient member **30**, and as shown in FIG. 1 of the drawings, constitutes about one-fifth of its total length. The resilient or flexing portion of the spring member **30** extends from the apex line **32*a*** to the front member of the seat **14** and is adapted to articulate between an unstressed upwardly arched position **33** to a flexed and stressed condition as shown by the broken line figure **34** of FIG. 3. As shown, this resilient portion **33** constitutes a major proportion of the member **30**.

As may be seen in FIG. 2 of the drawing, the apex lines **32*a*** define a line running generally parallel to the rear member **16** of the seat frame **12** and spaced forwardly thereof.

One principal advantage in this type of construction is that in normal use the furniture embodiments described herein have an overlying cushion which rests upon the resilient supporting surface defined by the plurality of means **30** spanning the frame of the seat **12**. It is also conventional to provide a plurality of back rest cushions which rest against the back support member **24** and more particularly, as shown in the embodiment of FIG. 1, the riser rods **26**. In ordinary flat spring constructions the flexing of the flat seat spring through its entire length drops the whole cushion and underlying spring structure downwardly toward the center of the seat, at the same time moving the rearward portion of the cushion and the back rest downwardly, contributing to an uncomfortable seating of a person using the item. In the construction of the present invention the rigid sectors **32** are essentially rigid and relatively nonflexing in ordinary use and contribute to maintaining the rear portion of the cushion and the associated back rest cushions in a relatively fixed position with respect to the frame of the chair, settee or the like. The present construction also permits the seating of people of different weights on the settee of the type shown in FIG. 1, and the independent action of the various springs is not transmitted to the next adjacent person seated on this device.

In the particular embodiment illustrated in FIG. 1, nonflexing members **34** essentially segregate the seating areas and isolate them for the comfort of the persons who would be seated thereon. This contributes to the rigidity of the seat construction as a whole and this of course would be taken into account when providing the cushions for the settee which, in this instance, would preferably be three individual seat cushions and three individual back rest cushions. It is also fairly common to provide two cushion settees, in which instance the nonresilient strap member **34** would appear in the center of the seat frame **12**, and its complementary back rest cushion, of course, would be two rather than the three cushion variety.

FIG. 2 illustrates a further embodiment of the present invention, particularly a chair construction. Like FIG. 1, the chair construction of FIG. 2 is provided with a rectangular seat frame **36** having front member **38**, rear member **39**, and side members **40**. Arms **42** are also provided and are essentially similar to the arms **22** of the settee embodiment. The right arm in FIG. 2 is only partially shown for clarity of illustration. The chair is also provided with a back rest **44** similar in construction to that shown for the settee of FIG. 1. In this construction

the resilient members are identified as **30**, **30***a*, **30***b* and **30***c*, the latter three in pairs. For the embodiment of FIG. 1, all of the resilient or flexible sectors **33** of the members **30** would have identical flexibility. In FIG. 2 however the spring members are graded laterally from the center member **30** in resilience or flexibility. The resilient sector **33** of this member **30** has the least flexibility, members **30***a* on either side thereof have somewhat greater flexibility, members **30***b* have greater flexibility than members **30***a*, and members **30***c* have greatest flexibility.

In this particular embodiment it is again conventional to use cushions overlying the surface plane defined by the resilient members **30**, **30***a*, **30***b* and **30***c*. Since a person seated thereon exerts the greatest pressure in the center area of the seat, these springs have correspondingly less resilience, and on the outer portions they have more resilience. This gradation contributes to an overall more comfortable effect. The same advantages described for the settee embodiment also apply to the relatively nonflexing or rigid sectors **32**.

From the foregoing it may readily be understood that the present invention may be used in seat constructions having a variety of forms. For example, the arm supports and/or back supports shown in the settee may be entirely omitted, being of another type.

Likewise the floor engaging and associated members **20** and **21** may take a variety of forms and it should be understood that these accouterments of the seat construction do not form a part of the invention, but are merely shown as illustrative means.

From the foregoing it is apparent that the seating construction of the present invention provides an economical and compact means for cushion supports without sacrifice of comfort or appearance. One of the difficulties with conventional modern spring cushion supports is that they are often welded or formed in such a manner that replacement of the spring units as a whole is required, rather than repair. In the present invention it is possible to secure each of the members **30** by means of rivets, screws or the like, to the frame. These can easily be replaced without wholesale dismantling of the entire spring structure.

While several particular embodiments of this invention are shown above, it will be understood, of course, that the invention is not to be limited thereto, since many modifications may be made, and it is contemplated, therefore, by the appended claims, to cover any such modifications as fall within the true spirit and scope of this invention.

I claim:

1. In a seating construction including a rectangular seat frame, having front, rear and side members and floor engaging members extending downwardly from the frame, the improvement which comprises a plurality of resilient members extending between the front and rear portions of the frame disposed in spaced parallel relationship defining a resilient supporting surface within the frame, the resilient members having a rigid sector extending forwardly and upwardly from the rear frame member to an apex and a flexible resilient sector extending forwardly from the said apex to the front frame member.

2. The seating construction of claim **1** wherein the apex of the resilient members defines a line parallel to the rear member.

3. The seating construction of claim **1** wherein the resilient members are flat strips.

4. The seating construction of claim **1** wherein the resilient members are arranged in seating sectors within the frame.

5. The seating construction of claim **1** wherein the resilient members are arranged within the frame in order of increasing resilience from a central member outward to the side members of the frame.

6. A resilient spring and support member comprising a flat strip having a relatively straight rigid sector extending for a minor proportion of its total length from one end thereof to an apex line, and an arcuate resilient and flexible sector extending for a major proportion of its length, the apex line being the highest point in the member with reference to a plane connecting the ends of the member.

7. A settee construction comprising a rectangular seating frame having front, rear and side members, a plurality of floor engaging and support means extending downwardly from the frame, arm supports affixed to the sides of the frame, a back support affixed to the rear of the frame, and a plurality of resilient cushion supporting means in flat strip form extending between the front and rear frame members, said members having a straight rigid sector at the one end extending upwardly and forwardly of the rear frame member to an apex, and a resilient spring sector extending arcuately and forwardly from the apex to the front frame member, said resilient sector adapted to flex during normal use and provide a resilient spring supporting action, the resilient cushion supporting members being arranged in parallel spaced relationship to each other and the side frame members and arranged in seat supporting groups within the frame.

8. A chair construction comprising a rectangular seat frame having front, rear and side members, back and arm supporting means affixed to the rear and side members of the frame, legs extending downwardly from the frame, and a plurality of flat strip-form resilient cushion supporting means fixed within the seat frame between the front and rear members thereof and having a straight rigid sector extending upwardly and forwardly of the rear member for a predetermined distance to an apex, and a resilient sector extending arcuately downwardly and forwardly from the apex to the front frame member, the resilient members being arranged within the seating frame so as to provide means of uniformly increasing resilience extending outwardly to the side members of the frame from a line of reference in the center of the seat frame.

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