July 15, 1958 A. E. A. BARVAEUS 2,843,195

SELF-ADJUSTING BACK SUPPORT

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Fig. 1

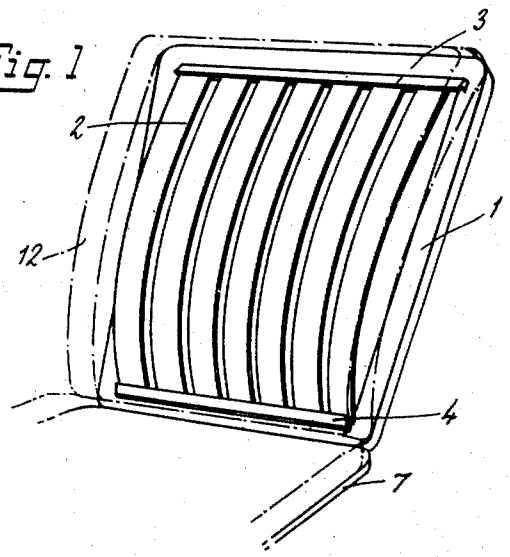


Fig. 2

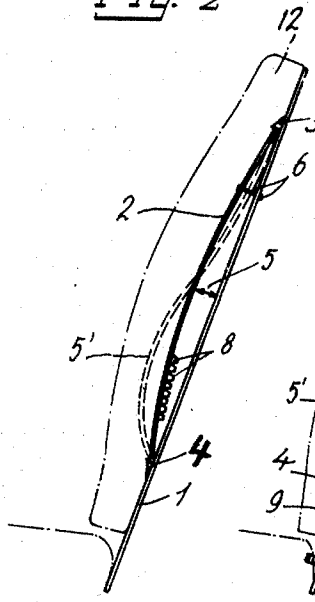


Fig. 3

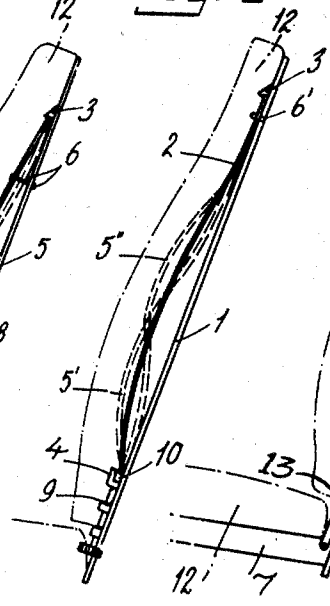
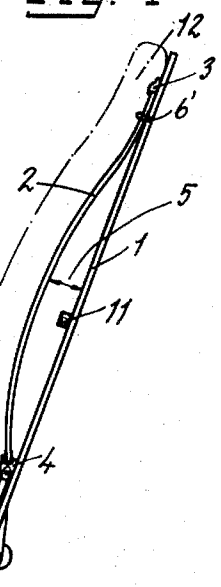


Fig. 4



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SELF-ADJUSTING BACK SUPPORT

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4 Claims. (Cl. 155—182)

This invention relates to an improved back support for seats of any kind, which back support may either be upholstered with e. g. foam latex or similar upholstery material or left uncovered.

The main object of my invention is to provide a seat back which is capable of automatically adjusting itself to the body of the user thereby giving a highly comfortable and at the same time anatomically correct support for the user's back. Another object of the invention is to provide a seat back capable of forming a self-adjusting loin support automatically selecting a contour fitting the body of the user irrespectively of the size of the user's body. A further object of the invention is to provide a back support capable of forming a translatory movable loin supporting arch having a certain, preferably adjustable minimum amplitude and length.

My invention is based on the fact that a translatory movable arch may be obtained by attaching both the ends of a resilient strip-like member to a backing structure at points which lie closer to one another than the length of the strip-like member. It will be clear that a resilient strip-like member thus attached to the backing will form an arch between the two points and if the distance between the two points of attachment is only slightly shorter than the length of the strip-like member, the arch formed by the strip-like member will be low and extend substantially from the one attachment point to the other. A pressure exerted on the strip-like member in the direction towards the backing structure will then be able to press a certain length of the strip-like members into contact with backing structure thus reducing the length of the arch. At the same time the amplitude or "peak-height" of the arch will be slightly reduced but it will never be possible to reduce the length and the amplitude of the arch beyond a certain minimum value without breaking the strip-like member. This minimum arch will be capable of moving translatory over the front surface of the backing like a swell over the sea and the size of the said minimum arch may be selected by varying the distance between the two points of attachment in relation of the length of the strip-like member and also by varying the resiliency of the strip-like member.

Other objects and advantages of my novel construction will appear from the following description of various embodiments of my invention which have been illustrated on the accompanying drawing, wherein Fig. 1 is a perspective front view of an elementary form of my back support as used in a car seat,

Fig. 2 is a side elevation of a modified form of my construction,

Fig. 3 is a side elevation of a third embodiment of my invention and

Fig. 4 is a side elevation of a further form of my back support adapted for use in a chair or seat having a back with adjustable inclination.

In all the different figures the same reference characters have been used to indicate similar parts or parts

having similar function. Thus in all figures numeral 1 designates a rigid panel-like backing in front of which there are arranged a plurality of parallelly spaced vertically extending strip-like members 2 of steel, rattan or like materials. The strip-like members 2 have their ends lying close to or in the vicinity of the front surface of the backing structure 1 and the upper end of each resilient strip-like member 2 enters a small pocket in the underside of a molding strip 3 being rigidly secured to the front surface of the backing 1 near the top edge thereof so as to transverse the backing structure horizontally. The upper end of each strip-like member 2 thus abuts the molding strip 3 being thereby retained in a pre-determined position relatively to the backing structure 1. The lower end of each strip-like member 2 enters a similar pocket in the upper side of a lower transverse molding strip 4 which also exends substantially horizontally over the front surface of the backing structure so as to confine the lower end of each strip-like member 2 within a pre-determined distance from the upper end of the related strip-like member. The molding strips 3 and 4 are spaced apart vertically a distance which is slightly shorter than the actual length of each of the strip-like members and thus the molding strips 3 and 4 will serve as abutments for the ends of the strip-like members causing said strip-like members to take the form of an arch or a bow between the confining abutments.

The arch or bow thus formed by each strip-like member 2 will have an amplitude or "peak-height"—in Figs. 2 and 4 indicated by numeral 5—which may be varied by adjusting the distance between the two horizontal moldings or abutment strips 3 and 4. To allow for such adjustment I have provided in the back support shown in Fig. 3 screw-means 9 for displacing the lower molding strip 4 parallelly up and down a very small distance. It should be noted however that adjustment of the screw-means 9 will change the maximum amplitude 5 of the arch formed by each strip-like member and not in any way influence the other properties of the back rest. A similar adjustment may be obtained in a chair having a back, the inclination of which may be adjusted at will, by forming the molding strip 4 like a slide movable up and down over the front surface of the backing plate 1 and being connected by a link 13 to the seat 7 of the chair in a manner to cause the molding strip 4 to move downwardly as the back rest is folded down backwardly.

Each strip-like member 2 thus caused to form a resilient arch over the front surface of the backing structure 1 will under the pressure of a human body leaning against it become partly pressed into contact with the front surface of the backing plate 1 by the shoulder and the hip portions of the user so that the arch formed by the strip will be reduced in length and this minimum arch will be capable of translatory movement up nad down over the front surface of the backing structure just like a swell is moving over a water surface. Thus the minimum arch will always adjust itself to a position in which it fits the loin curvature of the body of the user. This translatory movement of the arch has been indicated at 5′ and 5″ in Figs. 2 and 3. To prevent the minimum arch from moving too far upwardly towards the upper molding strip 3 as a result of an uncontrolled pressure against the strip-like members 2, which movement may cause breaking of the strips or their disengagement from the upper molding strip 3, the upper portion of each strip-like member 2 is preferably connected to the backing structure 1 by a distance-maximating means in the form of a flexible tie 6 as shown in Fig. 2 or a rivet 6′ or the like as shown in Figs. 3 and 4. To prevent the strip-like members 2 from forming a too steep arch at its lower portion stiffening means 8 may

be arranged on the back of each strip-like member **2** as shown in Fig. 2.

In Fig. 4 numeral **11** designates a transverse strip of foam latex serving to initiate the formation of an arch from each strip-like member **2** when the distance between the two molding strips **3** and **4** is reduced as a result of the raising of the back from a horizontal to an inclined position. Similar means may of course be used in the structure shown in Fig. 3. In Fig. 3 there is also provided a small cushion **10** in the pocket of the lower molding strip **4** to make the arch formed by each resilient strip-like member **2** somewhat yielding. In all the embodiments shown numeral **12** designates a layer of foam latex or other upholstery material which may cover the front of the back support. The thickness and other properties of such covering may of course be varied as desired and in certain cases the strip-like members of the back support may be left fully uncovered.

It will be obvious to those skilled in the art that various changes may be made in my construction without departing from the spirit of the invention and therefore I do not wish to confine myself to the embodiments shown in the drawings and described in the foregoing specification.

I claim:

1. In a seat back the combination of a rigid, panel-like backing, vertically spaced abutments protruding over the front surface of said backing, a plurality of parallelly spaced resilient strip-like members vertically arranged in front of said backing and having their end portions supported by said abutments, the length of each such strip-like member exceeding the distance between the pair of related abutments, and said strip-like members hence being caused to form a resilient arch over a considerable vertical length of said backing, the ends of said arch being so located to said backing and the rise of said arch being so chosen with respect to the resiliency of said strip-like members that a moderate local pressure on each of said members will enable an intermediate point of said arched member to be brought into contact with said backing thereby reducing the span of the arch and hence make said reduced arch capable of translatory vertical motion over said backing.

2. In a seat back the combination as claimed in claim 1 wherein said strip-like members within the upper half of their length are connected with the backing through distance-maximating means.

3. In a seat back the combination as claimed in claim 1, wherein said abutments are vertically adjustable relatively to said backing for adjustment of the rise of the arch formed by each of said strip-like members.

4. A self-adjusting back support for seats comprising in combination a rigid backing structure, a plurality of parallelly spaced resilient strip-like members extending over the front surface of said backing structure, both ends of each of said strip-like members lying close to the front surface of said backing structure, an abutment protruding over the front surface of said backing structure at each end of said strip-like member for preventing the related end of the strip-like member from moving in the longitudinal direction of the member beyond said abutment, the distance between the two abutments co-operating with each strip-like member being slightly shorter than the length of said strip-like members so as to cause each of said strip-like members to form a translatory movable arch over the front surface of said backing structure.

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