April 19, 1955 W. J. KRANZ 2,706,519

CHAIR BACK AND THE LIKE

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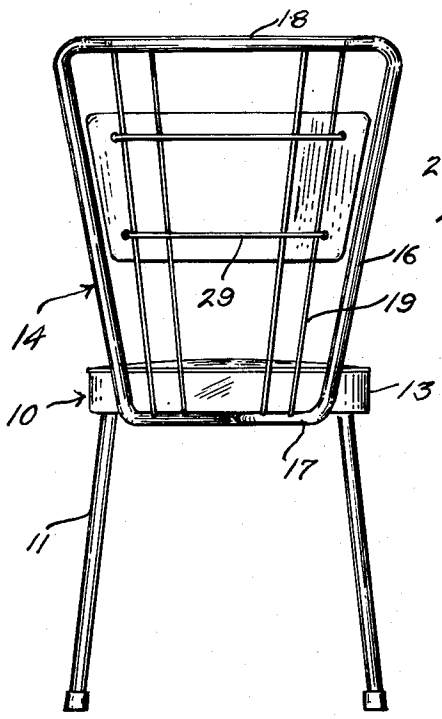


FIG-1

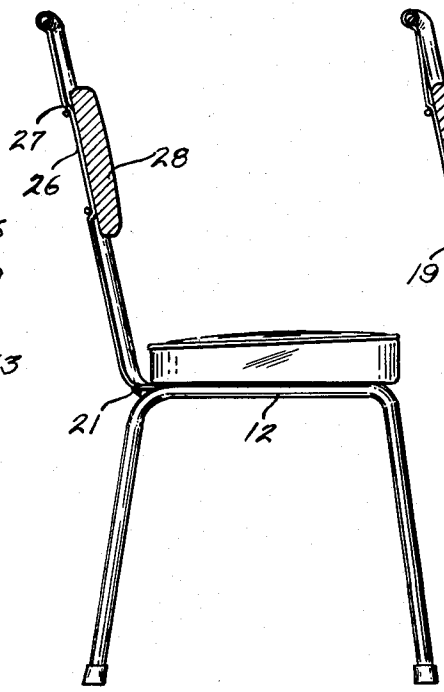


FIG-2

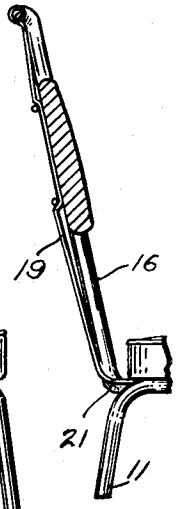


FIG-3

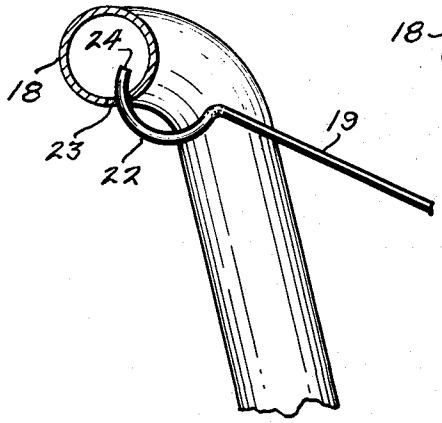


FIG-4

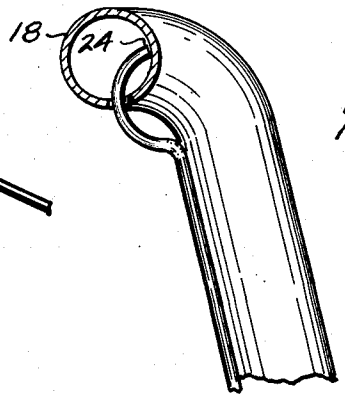


FIG-5

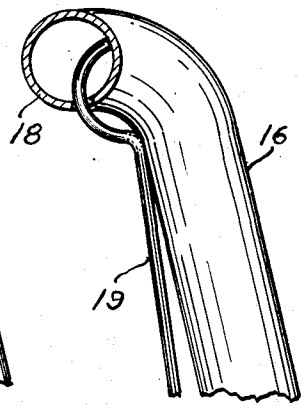


FIG-6

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CHAIR BACK AND THE LIKE

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4 Claims. (Cl. 155—194)

This invention relates to improvements in back supports for metal chairs and the like and more particularly to supports as defined or outlined by a hollow tubular frame of desired form. Specifically, the invention is directed to the provision of resilient rods as a support for a back rest pad or cushion.

Wire rods have heretofore been used as a filler for a metal frame to provide a back rest for a chair or similar article. In some instances these rods have been of such diameter that, even though secured only at their ends, they provided nothing more than a rigid openwork back rest. In other instances, the rods have been formed from resilient wire, presumably with the intention of providing a back rest having a measure of resiliency. However, these resilient rods were generally either connected with and secured to a series of cross rods, or were so secured to the frame and seat as to preclude any movement in a direction that would give a user a somewhat resilient back support. Obviously, if the rods or straps used to fill the space in the back frame of a chair are not resilient or, being resilient, are so anchored and contoured as to prevent movement of the intermediate portions thereof, such a back support would seem to be intended primarily for appearance rather than comfort.

The present invention provides a series of resilient rods as the filler for the back frame of a chair. These rods are contoured between their ends to provide centrally forwardly offset portions to which a pad or cushion is attached. The remaining portions of the rods are either straight or inclined slightly rearwardly towards their ends in order that the centrally offset portions may project beyond the front plane of the frame. The lower ends of the rods are secured to the chair frame or to the support for the seat in any suitable manner. The upper ends of the rods, however, in order to provide desirable resiliency, are engaged with the back frame in a manner to allow a predetermined extent of movement.

It is an object and advantage of the present invention to provide a back support for a chair or similar article that is of simple and easily assembled construction.

Another and important object of the invention lies in the provision of supporting structure for a back rest pad or cushion that is of sufficient resiliency to give adequate support and comfort to a user.

Another and further object of the invention lies in the provision of a back support that, although having resiliency for comfort, is, nevertheless, of neat and trim appearance.

Other objects and advantages of the invention will be more fully understood from a consideration of the following specification, taken in conjunction with the accompanying drawing in which:

Fig. 1 is a rear elevational view of a chair showing one form of back support embodying the invention;

Fig. 2 is a side elevational view of the chair with the back frame in vertical section and shows the supporting structure within the frame and the pad in position of rest;

Fig. 3 is a fragmentary view similar to Fig. 2 and shows the position of the support and pad when flexed as in use;

Fig. 4 is a greatly enlarged fragmentary view, partly in section, showing the method of mounting the resilient rods that constitute the pad support;

Fig. 5 is a view similar to Fig. 4, showing the position of the rods when at rest, as in Fig. 2; and

Fig. 6 is a view similar to Fig. 5 showing generally the position assumed by the rods when they are flexed and under pressure of use.

Referring more particularly to the drawing, the reference numeral **10** is employed to generally designate a chair in which one form of the invention is embodied. The chair illustrated is constructed from hollow tubular metal and includes legs **11**, to the horizontal connecting portions **12** of which a suitable seat **13** is attached. The mounting of the seat on the legs has no bearing on the present invention and is therefore shown only to the extent needed for illustration. The back rest frame **14** may be of any practical design but, in any event, will include upwardly extending side members **16**. The lower horizontal portions **17** of these members project beneath the chair seat and are attached thereto in any suitable manner. The upper ends of the member **16** are connected by a cross rail **18** which may, as suggested in the drawing, be integral with these members. Although the cross rail **18** is shown to be horizontal, the successful assembly and operation of the invention is not dependent on this portion of the frame being identical with the showing in the drawing.

The space within the back frame, formed by the side members **16**, horizontal rail **18**, and seat **13**, is filled with a suitable number of resilient rods **19**. In the present instance only four such rods are provided. However, the number of rods most satisfactory to carry out the invention is substantially dependent on the size or area of the space within the back frame. The lower end of each of the rods **19** may be bent, as at **21**, and secured in any convenient way to the under surface of the seat **13**. The upper ends of the rods **19** terminate in laterally offset semi-circular hook portions **22**. The size of the curve of the portions **22** and the extent of their offset from the main body of the rod has been carefully determined for several reasons. In the first place, it is proposed, in assembling the rods to the frame **14**, to engage their upper ends first with the cross rail **18**. This rail is provided with the required number of openings **23** and, when each end portion **22** is projected through the opening **23** into the rail, the rod may be swung from substantially the position suggested in Fig. 4 to that of Fig. 5. At this point, the lower bent ends **21** of the rods are permanently attached. It will be particularly noted that, when the rods are secured at their upper and bottom ends and assume the position generally suggested in Figs. 2 and 5, the extreme ends **24** thereof contact the inner circular surface of the rail **18** and the outer surface of the curved portion contacts one edge of the opening **23**.

At any suitable point intermediate their ends, each rod is formed with a forwardly offset portion **26**. Each portion **26** is defined at its upper and lower ends by bends **27**. A pad or cushion **28** is to be mounted on the offset portions **26** and is secured to the rods **19** by a pair of cross rods **29**. The ends of these cross rods are suitably anchored to the pad and the body portions thereof are parallel to but spaced from the back of the pad to an extent only sufficient to enclose the offset portions **26** of rods **19** and hold them in contact with the pad. Due to the bends **27**, the cross rods 29 can move neither upwardly nor downwardly of the rods **19**, and thus the pad **28** is held against misalignment or displacement.

As has been brought out above, it is the purpose of the invention to provide a resilient back support and, as further explained, it is important to provide a resilient support even though the back supporting portion consists of rods or straps that are securely anchored to the back frame. By providing the present connection of the rods **19** with the horizontal rail **18**, these rods are permitted a measure of distortion by bending when pressure is applied to the face of the pad **28**. As this pressure is applied, the portions **22** of the rods swing from the position of Fig. 5 to substantially that of Fig. 6. In the present illustration of Fig. 6, the rod will be seen to have moved more or less about a movable pivot. This movement, produced by deflection of the rods, might have a tendency to twist them. However, due to the bearing of the curved portions **22** against the walls of the openings **23** and the constant contact of the ends **24** with the inner surface of the rail **18**, no tendency of the rods to twist or turn occurs, and the rods are only deflected to the extent permitted by the change in position of their upper ends.

Although applicant has shown and described only one

structure for mounting resilient rods in a chair back frame, it will be understood that variations of this structure may be made and will give desired resiliency as long as the filler elements or rods of the frame are capable of adjusting movement when pressure is applied to the back rest pad as would occur in use, and that such variations are contemplated as being within the spirit and scope of the invention insofar as they are set out in the annexed claims.

Having thus set forth my invention, what I claim as new and for which I desire protection by Letters Patent is:

1. A back support for a chair comprising a back frame consisting of spaced side members, a tubular cross rail connecting the upper ends of said members, a series of resilient rods extending between the seat of said chair and said cross rail, generally semi-circular portions terminating the upper ends of said rods, said portions partially projecting into said rail through suitable openings and being movable in the direction of their curvature to enable flexing said rods in use.

2. A back support for a chair comprising a back frame consisting of spaced side members, a tubular cross rail connecting the upper ends of said members, a series of resilient rods extending between the seat of said chair and said cross rail, centrally forwardly offset portions on said rods, a pad secured against movement with respect to said portions, generally semi-circular portions at the upper ends of said rods, the ends of said portions being substantially in the plane of the length of said rods, said portions partially projecting into said rail through suitable openings with the ends thereof in contact with the inner surface of said rail whereby bodily movement of said portions may occur to enable flexing said rods upon the application of pressure against said pad.

3. A back support for a hollow tubular metal chair comprising a back frame consisting of spaced side members, a cross rail connecting the upper ends of said side members, a series of resilient rods extending from the seat of said chair to said cross rail, centrally forwardly offset portions on said rods, a pad overlying said portions, other rods attached at their ends to said pad being located at the rear of said resilient rods and within the recesses formed by said offset portions whereby to secure said pad against displacement from said rods.

4. A back support for a hollow tubular metal chair comprising a back frame consisting of spaced side members, a cross rail connecting the upper ends of said side members, a series of resilient rods extending from the seat of said chair to said cross rail, centrally forwardly offset portions on said rods, a pad overlying said portions, other rods attached at their ends to said pad being located at the rear of said resilient rods and within the recesses formed by said offset portions whereby to secure said pad against displacement from said rods, generally semi-circular portions at the upper ends of said rods, the ends of said portions being substantially in the plane of the length of said rods, said portions partially projecting into said rail through suitable openings with the ends thereof in contact with the inner surface of said rail whereby bodily movement of said portions may occur to enable flexing said rods upon the application of pressure against said pad.

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