Oct. 27, 1953 W. H. REINHOLZ 2,656,878

CHAIR

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3 Sheets-Sheet 1

FIG. 1.

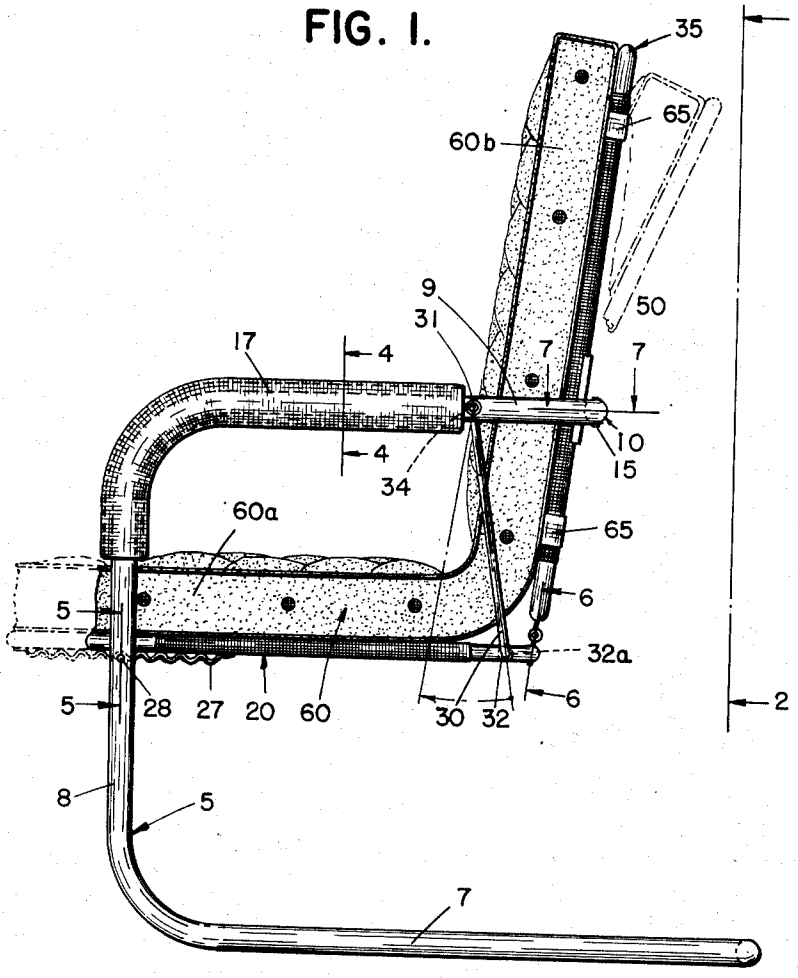


FIG. 6.

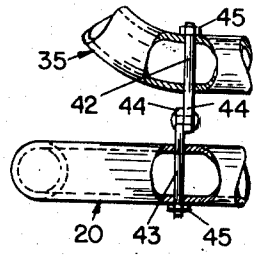


FIG. 4.

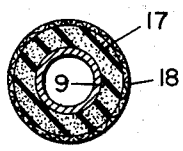
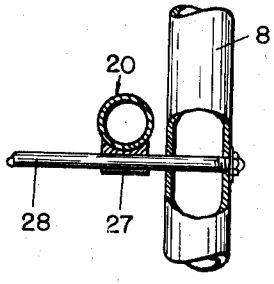


FIG. 5.



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FIG. 2.

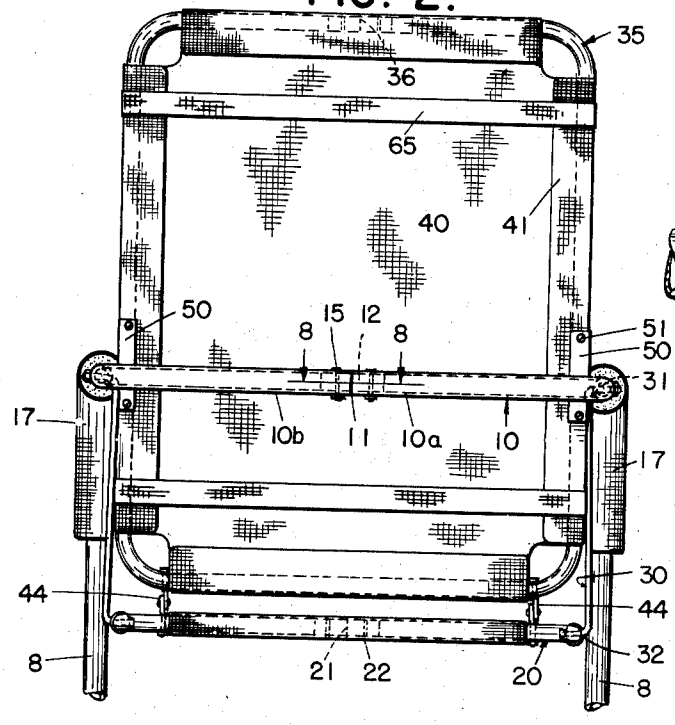


FIG. 8.

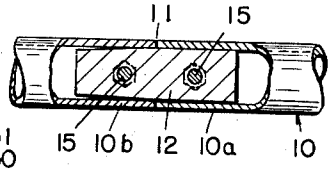


FIG. 7.

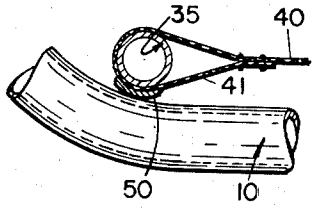
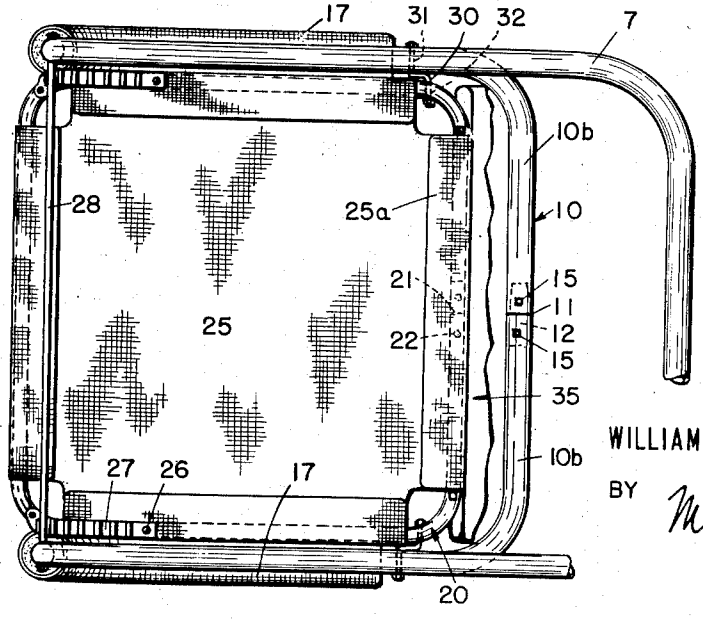


FIG. 3.



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FIG. 10.

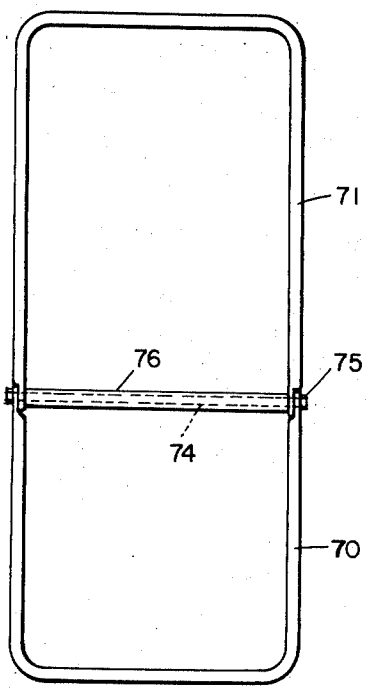


FIG. 9.

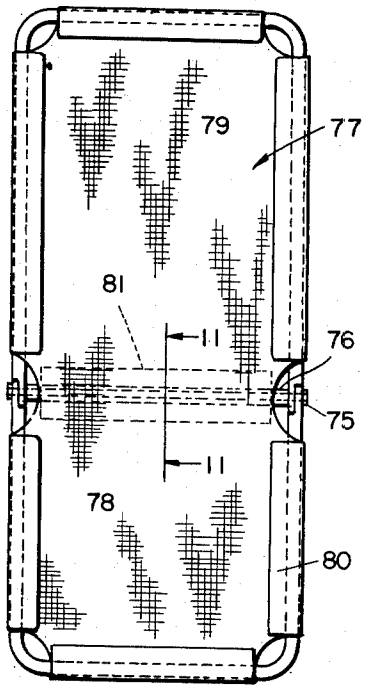


FIG. 11.

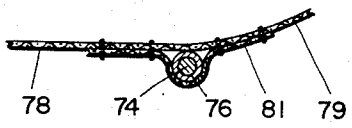


FIG. 13.

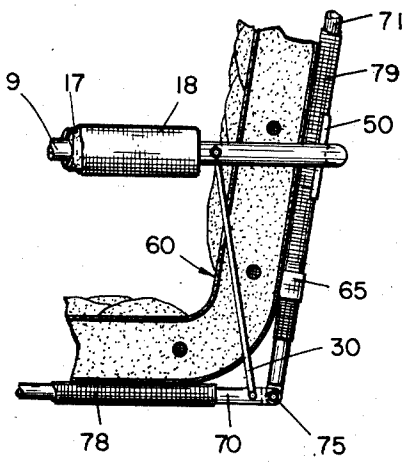
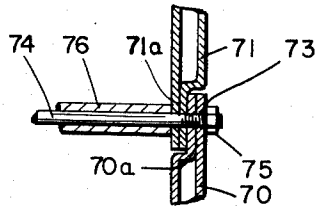


FIG. 12.



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UNITED STATES PATENT OFFICE

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CHAIR

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Application July 15, 1946, Serial No. 683,651

2 Claims. (Cl. 155—54)

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This invention has to do with chairs of the type having metal frames made of tubing or bar stock bent into U-shape for resiliency in order to eliminate the necessity of seat springs, and in which the seat and back rest portions are adjustable to obtain various reclining positions.

It is an object of my invention to provide a chair of this character in which the adjustments may be effected by simply slightly lifting the front portion of the seat support and pushing it backwardly or moving it forwardly.

Another feature of my invention is the construction whereby I am able to obtain such adjustability of the seat and back rest in a chair having a frame of the type above described.

Another object of my invention is to provide a chair of this type which is unusually economical of manufacture, comfortable to use and easy to adjust.

My invention has still further subordinate advantages and features of novelty which will become apparent from the following description of one presently preferred embodiment thereof which I have selected for the purpose of explaining the invention. However, I wish it understood that within the limits of the appended claims it is contemplated that my invention may be embodied in other and modified physical forms without departing from its broader scope. For purposes of the ensuing description I shall refer to the accompanying drawings, in which:

Fig. 1 is a side elevation;

Fig. 2 is a back elevational view taken on line 2—2 of Fig. 1;

Fig. 3 is a bottom plan view with part broken away;

Fig. 4 is an enlarged cross-section on line 4—4 of Fig. 1;

Fig. 5 is an enlarged fragmentary detail, shown partly in elevation and taken on line 5—5 of Fig. 1;

Fig. 6 is an enlarged fragmentary detail shown partly in elevation and taken on line 6—6 of Fig. 1;

Fig. 7 is an enlarged fragmentary detail taken on line 7—7 of Fig. 1;

Fig. 8 is an enlarged fragmentary detail taken on line 8—8 of Fig. 2;

Fig. 9 is a plan view of a modified seat and back rest assembly;

Fig. 10 is a view like Fig. 9 with the fabric omitted;

Fig. 11 is an enlarged section on line 11—11 of Fig. 9;

Fig. 12 is an enlarged fragmentary section; and

Fig. 13 is a fragmentary section of the chair assembly showing a modified form of seat frame.

Referring now to the drawings, the main or base frame 5 is composed of a single length of

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resilient metal tubing bent to form a U-shaped floor-engaging or base portion 7, parallel upright front posts 8, backwardly bent parallel arm rest supports 9, and a transverse back rest support 10. The free end portions 10*a*, 10*b* of the tubing going to form the back rest support 10 terminate medially between the arm rest supports and in coaxial relationship, being secured together by means of a plug 12, one of whose ends is tapered and is wedge-fitted into the tube end portion 10*b* and the other of whose ends is of uniform diameter and slidably fits in tube end portion 10*a*. Both ends of the plug are positively held against axial escape from the tubing by bolt and nut arrangements 15, which pass through registering openings in the tubing and through transverse holes in the plug as best shown in Fig. 8. Thus by removing the bolt 15 the free ends 10*a*, 10*b* may be axially separated at the joint 11 and also may be moved laterally with respect to each other.

For the arm rests, a pair of sponge rubber sleeves 17 are fitted onto the respective arm rest supports 9, each of the sleeves preferably having a fabric covering 18 (Fig. 4).

The seat-supporting frame 20 is a substantially square frame having rounded corners, composed of a single length of metal tubing whose free ends terminate in coaxial relationship at the joint 21 and are held together by a plug and bolt arrangement 22 identical with the arrangement shown in detail in Fig. 8, except that, if desired, the bolt 15 to hold the tapered end of the plug in the tubing may be omitted.

A seat base 25 consists of a sheet of fabric having looped or sleeve-like marginal portions 25*a* which slidably fit on the tubing forming the seat-supporting frame. The loops are large enough to permit them to be moved along the tubing until entirely removed between the free ends of the tubing at the joint 21 when the plug is removed.

Adjacent the front end of each of the side portions of the seat-supporting frame 20 and to the undersurface thereof, there is secured, as by screws 26, a corrugated or toothed strip 27 adapted to rest upon a cross bar 28, so that the bar engages between contiguous teeth of each strip. The bar 28 extends at its ends through openings in front posts 8 (Figs. 3 and 5).

The rear end portion of the seat-supporting frame is swingably suspended from the arm rest supports 9 by means of bales or links 30. These links have oppositely disposed right-angled end portions 31, 32; end portion 31 of each link rotatably fitting in a hole 34 in one of the arm rest supporting members 9 and end portion 32 of each link rotatably fitting in a hole 32*a* through one of the side members of the seat-supporting frame.

The back rest supporting frame 35 consists of a single length of metal tubing bent into a rectangular frame, the free ends of the tubing terminating coaxially at the joint 36 (Fig. 2) and being held together by a bolt arrangement which is like 22 just described. A back foundation 40 consists of a sheet of fabric having looped or sleeve-like marginal portions 41 slidably fitting on the back rest supporting frame, the loops being large enough that the seat may be applied to or removed from the frame by sliding movement along the tubing and being passed between the free ends of the tubing at the joint 36 when the bolt arrangement 37 is removed.

The back rest supporting frame is pivotally joined to the seat-supporting frame by means of pins 42, 43 which have flattened inter-engaging eye portions 44 pivotally secured together as by a rivet. The pins are inserted through holes in the tubing and are threaded at their outer ends to receive nuts 45 (Fig. 6).

From the foregoing it will be observed that the reclining disposition of the seat and back rest of the chair may be adjusted by simply lifting the front end of the seat-supporting frame to disengage the teeth of the strips 27 from the cross bar 28, and then moving the seat-supporting frame backwardly or forwardly (as between the full and dotted line positions of Fig. 1). During this movement links 30 swing about their pivotal connections to the arm rest supporting arms and the seat-supporting frame, and the back rest supporting frame will swing about the arm 10 as a fulcrum. During the movement of the back rest supporting frame, said frame will have some slight sliding movement over the arm 10 and to protect the fabric 40 against wear during this sliding movement, I mount over the fabric on the side arms of the back rest supporting frame, a pair of metal plates 50 as by means of screws 51 or by any suitable retaining means.

A padded seat and back rest member 60 has its lower portion 60*a* resting on the seat base sheet 25 and its upper portion 60*b* resting against the back rest foundation 40. The upper portion of the member 60 is held in position on the back rest supporting frame 35 by means of a pair of straps 65 whose free ends are secured to the members 60 and which pass around the frame 35.

In Figs. 9–13 I show a modified form of seat and back rest assembly for use in the base frame before described. Here, instead of the seat support and back rest support each being a separate closed frame as before described, I form the seat frame 70 and the back rest frame 71 each in a U-shape—that is, each consists of a length of tubing bent into U-shape. Their contiguous free ends are flattened as shown at 70*a*, 71*a* and provided with registering holes 73. Ends 70*a*, 71*a* are pivotally secured together by a cross rod 74 threaded at its ends to receive nuts 75, a spacer sleeve 76 being mounted on the rod. A single sheet of fabric 77 forms the seat 78 and the back rest 79, having sleeve-like marginal portions 80 to slidably fit on the tubing. The sheet 77 is anchored to the sleeve 76 by a fabric strip 81 secured to its undersurface and passing over the sleeve (Fig. 11).

I claim:

1. In an adjustable chair, a main frame comprising a single length of resilient metal tubing bent to form a U-shaped floor-engaging base portion, parallel upright front posts, backwardly bent parallel arm rests and a transverse back rest support, means securing together the free ends of said length of tubing, a seat-supporting frame comprising a single length of metal tubing bent into substantially square frame shape, means securing together the free ends of the latter length of tubing, a sheet of flexible material secured to and stretched between opposite portions of the seat-supporting frame, a crossbar secured at its ends to said front posts intermediate the ends of the latter, the front portion of said seat-supporting frame being slidably supported upon said crossbar, link members each pivotally secured at one end to one of said arm rests adjacent the rear end thereof and each pivotally secured at its other end to a side portion of said seat-supporting frame adjacent the rear end of the latter, a back rest supporting frame against said back rest support and comprising a single length of metal tubing bent into substantially rectangular frame shape, means securing together the free ends of said latter length of tubing, the bottom portion of said back rest supporting frame being pivotally secured to the rear portion of said seat-supporting frame, and a sheet of flexible material secured to and stretched between opposite side portions of said back rest supporting frame.

2. In an adjustable chair, a main frame comprising a single length of resilient metal tubing bent to form a U-shaped floor-engaging base portion, parallel upright front posts, backwardly bent parallel arm rests and a transverse back rest support, means securing together the free ends of said length of tubing, a seat-supporting frame comprising a single length of metal tubing bent into substantially square frame shape, means securing together the free ends of the latter length of tubing, a seat base comprising a sheet of flexible material secured to and stretched between opposite portions of the seat-supporting frame, a crossbar secured at its ends to said front posts intermediate the ends of the latter, the front portion of said seat-supporting frame being slidably supported upon said crossbar, link members each pivotally secured at one end to one of said arm rests adjacent the rear end thereof and each pivotally secured at its other end to a side portion of said seat-supporting frame adjacent the rear end of the latter, a back rest supporting frame against said back rest support and comprising a single length of metal tubing bent into substantially rectangular shape, means securing together the free ends of the latter length of tubing, the bottom portion of said back rest supporting frame being pivotally secured to the rear portion of said seat-supporting frame, a back rest foundation comprising a sheet of flexible material secured to and stretched between opposite side portions of said back rest supporting frame, and a padded element resting partly upon said seat base and partly against said back rest foundation.

WILLIAM H. REINHOLZ.

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