Feb. 9, 1932. J. SILVERMAN 1,844,077

FOLDING CHAIR

Filed April 27, 1929

Fig. 1.

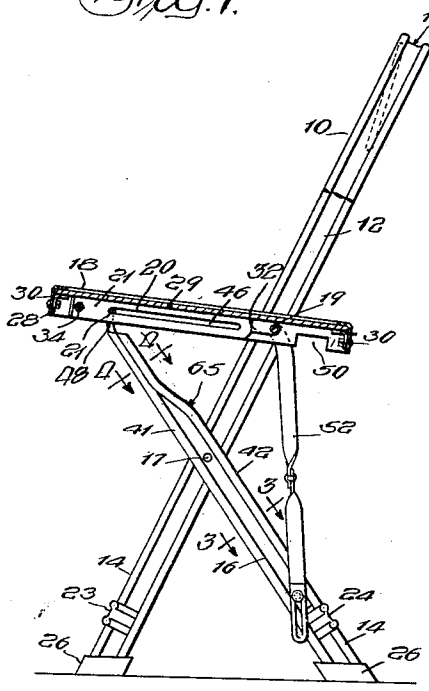


Fig. 2.

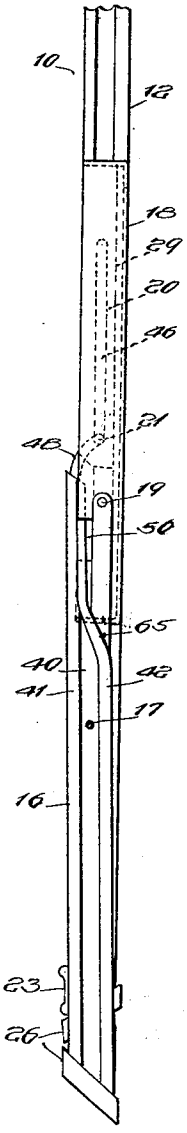


Fig. 3.

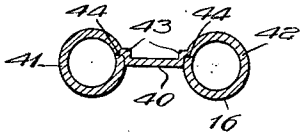
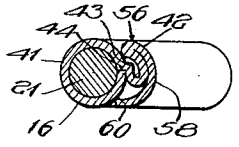


Fig. 4.



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UNITED STATES PATENT OFFICE

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FOLDING CHAIR

Application filed April 27, 1929. Serial No. 358,486.

This invention relates to folding chairs, more particularly to folding chairs of the type more fully disclosed in my copending application, Serial No. 180,701, filed April 4, 1927, now Patent No. 1,736,804, dated November 26, 1929, and its object is the provision of a generally improved and simplified construction for reducing the upper ends of the folding legs and for improving the finish and increasing the strength of the upper reduced ends of the folding legs of the chair.

The invention is illustrated in the accompanying drawings, in which:

Figure 1 is a vertical section through the chair of my copending application above referred to, showing the improved construction of the present invention at the upper ends of the folding legs;

Figure 2 is a fragmentary vertical section taken just inside one of the sides of the chair frame and showing the chair in folded position;

Figure 3 is a detail section, taken on the line 3—3 of Figure 1; and

Figure 4 is a fragmentary detail perspective view in section, taken on the line 4—4 of Figure 1.

Referring to the drawings, the chair shown comprises generally an inverted U-shaped frame 10, having parallel sides 12, closed at the top at 13 and open at their lower ends at 14. The lower free ends 14 of the sides of the frame 10 form one pair of legs of the chair.

A pair of folding legs 16 are pivoted between their ends at 17 between and to the opposite sides 12 of the frame 10. A seat 18 fits between the sides 12 of the frame 10 and has fixed pivotal connection at each of its opposite sides with the sides 12 at 19. The seat 18 also has sliding pivotal connection through bars or links and a suitable rod 21 with the upper ends of the pivoted legs 16. The lower leg forming ends 14 of the sides 12 and the legs 16 may be braced crosswise or transversely, by cross braces 23 and 24. The lower ends of the legs 14 and 16 are, preferably, provided with feet 26, such as, for example, more fully disclosed in my copending application, Serial No. 248,575, filed January 23, 1928.

The seat frame is, preferably, formed of angular stock with the depending flange 28 disposed substantially vertically when the chair is unfolded for use, as shown in Figure 1 and the seat proper 29 is secured in the frame by a suitable means 30. One of the bars or links 20 is disposed on the inside of each side of the seat frame and, preferably, up in the plane of the depending flange 28. At one end, each bar 20 is offset at 32 with the offset end lying against the seat frame flange 28 and secured thereto through the pivotal connections 19. The opposite ends of the bars 20 are turned inwardly and secured at 34 to the flange 28.

The frame 10, legs 16 and cross braces 23 and 24 are, preferably, formed of the stock which as best illustrated in Figure 3, is formed of sheet metal, with a central flat web portion 40 and opposite margins rolled to tubular form and preferably of generally circular section, as indicated at 41 and 42. The opposite sides of the flat median portion 40 are offset at 43 forming angular seats 44 and the free edges of the rolled margins 41 and 42 overlap the opposite sides of the flat web or median portion 40 and are seated in the angular depressions 44. The angular offsets 43 provide, in effect, a double reinforcement which gives the frame great strength and the permitted overlapping of the sides of the web 40 by the ends of the rolled margins 41 and 42 further braces these ends.

The pivotal and sliding connection between the upper ends of the legs 16 and the seat 18 is formed by the cross-rod 21 which extends transversely across the bottom of the seat frame and through longitudinal slots 46 in the bars 20. Outwardly of the bars 20 and between these bars and the adjacent depending flanges of the chair frame, the rod 21 at each side of the chair is offset at 48 and turned generally at right angles into the tubular extensions 41 of the legs 16.

The opposite rear corners of the depending flange 28 of the seat frame are provided with notches 50 for receiving the upper ends

of the legs 16 so that these legs, as well as the seat and braces 52 may all lie substantially within the plane of the frame 10 when the chair is folded.

To further permit swinging of the upper ends of the legs 16 into the notches 50, as well as folding of the seat and legs 16 into substantially the plane of the frame 10, the upper ends of the legs 16 are reduced. The details of the chair have been described somewhat in detail, in order to bring out clearly the purpose of the reduced upper ends of the legs 16 and it is this reduced construction of the upper ends of the legs 16 with which the present invention is especially concerned. The legs 16 are formed with both rolled margins 41 and 42 extending to the upper ends of the legs and with the upper ends formed as shown in Figure 3, these upper ends are placed in a suitable die, which is then operated to crush one rolled margin as, for example, the margin 42, down upon the other rolled margin 41. Either the end of the rod 21 is in place in the rolled margin 41 when this crushing action occurs, or a suitable filler is placed therein to prevent crushing of the margin 41 together with the crushing of the other margin 42 down thereon. Where the end of the rod 21 is in position within the margin 41 when the crushing action occurs, this crushing action may be further utilized to firmly and securely bind the rod 21 within the margin 41 simultaneously with the crushing of the margin 42 thereon. The crushing is, preferably, such as will keep the crushed margin 42 within the confines of the diameter of the margin 41, as shown in Figure 4, and preferably to impart a rounded contour to the surfaces 56 and 58. The crushing action produces, in effect, a double fold and the free edge 60 of the crushed margin 42 is, preferably, turned in against the margin 41 or otherwise concealed so that there will be no rough or shear edges exposed outwardly.

I find that this crushed formation at the upper ends of the legs 16 increases the strength of these upper ends and, at the same time, provides the reduction for permitting the upper ends to fold into the notches 50 and the seat and legs 16 into substantially the plane of the frame 10. With this crushed formation, there are no shear edges exposed outwardly and all exposed surfaces are nicely rounded with the elimination of any danger of tearing delicate clothes thereon. The crushing also further grips the free margins of the rolled portions 40 within the angular offset portions 43 and this is advantageous at the upper ends of the legs 16 because it is in these upper ends that the ends of the rod 21 are secured. The curvature at 65 (Figure 1) is, preferably, relatively blunt and rounded.

The further details of the chair and the operation thereof are disclosed in my copending application, Serial No. 180,701, filed April 4, 1927, now Patent No. 1,736,804, dated November 26, 1929, and above referred to, and in view of the illustrations in the drawings, the description which has already been made will not be repeated here.

I claim:

1. As an article of manufacture, a leg for folding chairs comprising a flat plate forming a flat web with the opposite margins of said web offset to form angular depressions and the opposite margins of the plate outwardly of said angular depressions being integral with said web and rolled to substantially circular section, the free edges of said rolled margins being seated in said angular depressions and overlapping the opposite sides of said web, one rolled margin continuing of substantially circular section to the upper end of the leg and the upper end of the other rolled margin being crushed together and upon said first margin.

2. As an article of manufacture, a leg for folding chairs comprising a flat plate forming a flat web with the opposite margins of said web offset to form angular depressions and the opposite margins of the plate outwardly of said angular depressions being integral with said web and rolled to substantially circular section, the free edges of said rolled margins being seated in said angular depressions and overlapping the opposite sides of said web, one rolled margin continuing of substantially circular section to the upper end of the leg and the upper end of the other rolled margin being crushed together and upon said first margin, and a rod secured in the upper end of said first margin.

3. As an article of manufacture, a leg for folding chairs comprising a flat plate forming a flat web with the opposite margins of said web offset for forming angular depressions and the opposite margins of the plate outwardly of said angular depressions being integral with said web and rolled to substantially circular section, the free edges of said rolled margins being seated in said angular depressions and overlapping the opposite sides of said web, one rolled margin extending of substantially circular section to the upper end of the leg and the upper end of the other rolled margin being crushed together and upon said first margin, the lower end of said crushed margin tapering from the rolled margin upon which it is crushed and toward and rounded bluntly into the opposite rolled margin.

4. As an article of manufacture, a leg for folding chairs comprising a flat plate forming a flat web with the opposite margins of said web offset for forming angular depressions and the opposite margins of the plate outwardly of said angular depressions being integral with said web and rolled to substan-

tially circular section, the free edges of said rolled margins being seated in said angular depressions and overlapping the opposite sides of said web, one rolled margin extending of substantially circular section to the upper end of the leg and the upper end of the other rolled margin being crushed together and upon said first margin, the lower end of said crushed margin tapering from the rolled margin upon which it is crushed and toward and rounded bluntly into the opposite rolled margin, and the crushed upper end being confined between sides of the extending substantially circular section at the upper end of the leg with the crushed margin having a free edge concealed and the sides of the crushed margin being rounded.

5. In combination, a chair frame, a seat pivoted therein, a pair of legs pivoted to the frame and connected with the seat, and means providing connections whereby said legs and seat may be folded into substantially the plane of the frame with the legs and seat overlapping, each leg comprising a flat plate with opposite rolled margins and with one of the margins crushed together and upon the other margin along the portion of the leg which overlaps the seat, said seat having notches for receiving the overlapping portions, whereby said crushed margins are accommodated in the folded condition of the seat and legs for disposition in the plane of the frame.

In witness whereof, I hereunto subscribe my name this 24th day of April, 1929.

JOSEPH SILVERMAN.