Feb. 10, 1942. G. D. SCHERMERHORN 2,272,329

CHAIR STRUCTURE

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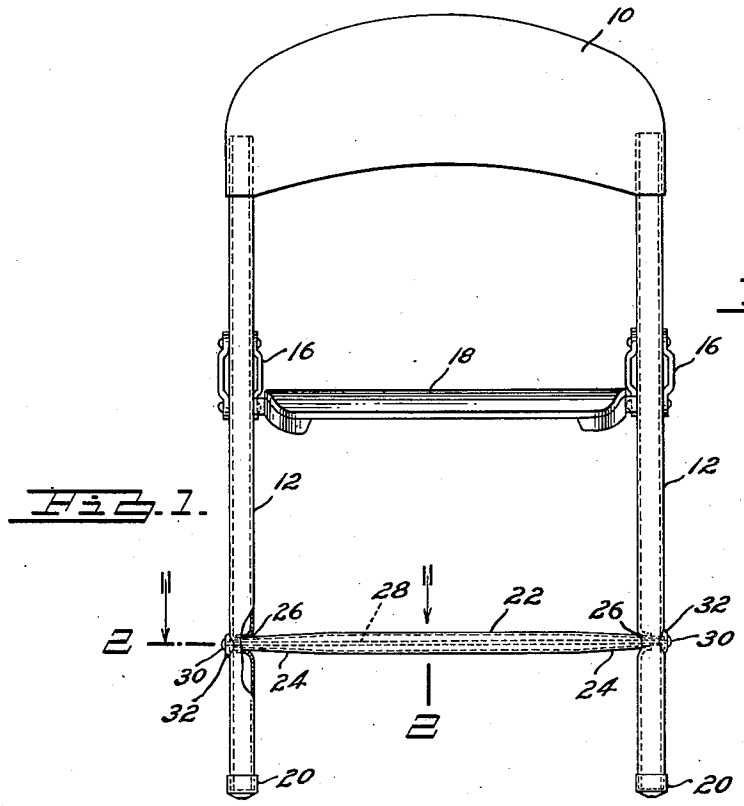


Fig. 1.

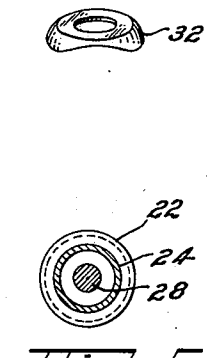


Fig. 4.

Fig. 5.

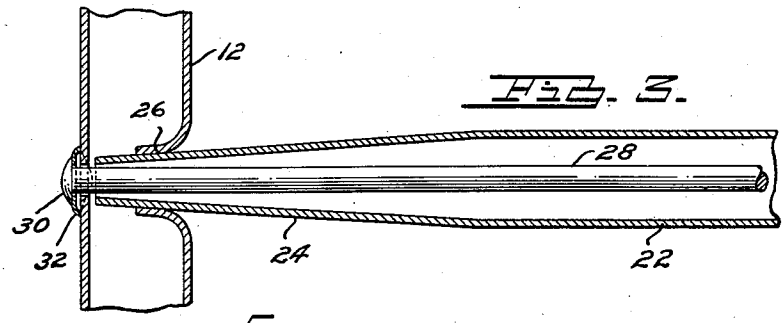


Fig. 3.

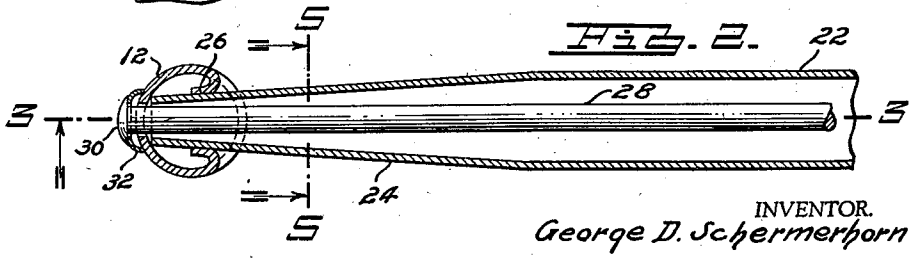


Fig. 2.

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CHAIR STRUCTURE

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2 Claims. (Cl. 155—197)

My invention relates to improvements in tubular metal frames, particularly such as are employed in folding steel chairs.

More specifically, the improvement relates directly to tubular bracing elements used to brace tubular supports, such as legs or the like, in definite spaced apart relationship.

An object is to provide an improved tubular frame work wherein a pair of legs or other structural members are held in determined spaced apart relationship by simple rugged tubular bracing means which functions effectively to hold the structural members at a determined spaced apart position and which is of a pleasing attractive appearance.

My improved tubular bracing means is shown as embodied in the tubular framework of a folding chair though obviously it is adaptable to tubular framework other than that of folding metal chairs. In folding metal chairs or other similar articles, it is desirable to attain maximum strength and ruggedness of construction with a minimum of weight and size of metal parts. It is also desirable that the framework be free from any exposed rough or angular edges or projections and that the joints formed by the connecting parts be smooth and that the entire framework present a graceful symmetry. My improved construction is designed to meet the above ends.

Other objects, advantages and meritorious features of this invention will more fully appear from the following specification, appended claims, and accompanying drawing, wherein:

Figure 1 is a front elevation of the tubular framework of a folding metal chair,

Fig. 2 is a cross-sectional view taken on the line 2—2 of Fig. 1,

Fig. 3 is a section taken on the line 3—3 of Fig. 2 and at right angles to the view of Fig. 2,

Fig. 4 is a perspective of the washer 32, and

Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 2.

The present invention is illustrated as embodied in the tubular framework of a folding chair, which chair is shown in front elevation in Fig. 1 and wherein the back of the chair is indicated as 10, which back is supported at the top of the two upright members or legs 12 to which are attached rear legs (not shown) by means of links herein indicated as 16. A seat 18 is pivoted between the front legs 12 and is also supported between the rear legs in a manner not shown as the folding construction of the chair forms no part of the present invention.

The legs 12 are of tubular metal construction. Such tubular formation may be rolled up out of sheet metal and welded together to form the tube, or shaped in any suitable and conventional manner. Preferably these tubular constructions are strong and light in weight and provided with conventional caps 20 over their lower ends.

My improvement here claimed relates to an improved tubular bracing means provided to hold the legs in a determined spaced apart relationship. A tubular element 22 is provided of the proper length and diameter and tapered at the ends as at 24 as shown in Figs. 2 and 3. This tubular element may be rolled up out of sheet metal and welded together or formed in any other suitable manner.

The legs 12 are pierced as at 26 to receive the tapered ends 24 of the brace member 22 as illustrated in Figs. 2 and 3. It is not desired to remove any of the metal from the leg structure 12 by the piercing operation but the piercing tool merely rolls back such sheet metal on the inside of the tube as is shown in Figs. 2 and 3 of a size to form a supporting flange for the tapered end of the brace.

Extending through the brace is a tie rod 28, which tie rod extends also through the outer wall of the tubular leg 20 and is riveted over at its end as at 30. To form a smooth crown there is provided a washer 32 which is shaped to fit snugly against the tubular leg 12 and is apertured to pass the tie rod 28 and is flattened to fit the rivet head 30 all as illustrated.

The tie rod 28 holds the legs 12 inwardly against the spacer tube 22, which spaces them the required distance apart. The end of the spacer tube 22 may, and preferably does, engage the inner surface of the outer wall of the tubular leg 12 into which such tapered end of the spacer tube extends as shown in Fig. 2. The spacer tube may be so tapered and may be of such a length, however, that the engagement of the tapered end portion 24 against the flange 26 will determine the desired spacing distance, in which case the end of the spacer tube will not seat against the inner surface of the outer wall of the leg as shown in Fig. 2. In either event the tie rod 28 holds the legs firmly against the taper end portion of the spacer tube and in the structure shown in the drawing holds the legs firmly against the extreme end of the spacer tube providing a strong rugged tubular frame work of symmetrical design.

What I claim:

1. A chair frame having a pair of opposed tubular legs formed of sheet metal and provided with a pair of oppositely disposed openings one formed in each inner side wall of each leg, a tubular spacer element having opposite end portions oppositely tapered said spacer element extending between said legs and having its tapered portions extending through said openings into the interior of said legs, each tapered end portion seated against the margin of the opening through which it extends and having its extreme end abutting the inner surface of the opposite side wall of the leg, each of said openings having its margin rolled inwardly forming a flange snugly embracing the tapered portion of the spacer extending therethrough, a tie rod extending through the spacer and projecting beyond each end thereof and through the outer wall of the leg against which the end of the spacer abuts, a washer encircling each projecting end of the tie rod and shaped to seat snugly against the outer surface of the leg encircling the tie rod, each end of the tie rod being flattened over its washer and holding the leg seated against the extreme ends of the spacer and seated against the tapered end portions of the spacer.

2. A chair frame having a pair of opposed tubular legs formed of sheet metal and provided with a pair of oppositely disposed openings one formed in each inner side wall of each leg, a tubular spacer element having opposite end portions oppositely tapered, said spacer element extending between said legs and having its tapered portions extending through said openings into the interior of said legs, each tapered end portion seated against the margin of the opening through which it extends and having its extreme end abutting the inner surface of the opposite side wall of the tubular leg, each of said openings having its margin rolled inwardly forming a flange snugly embracing the tapered portion of the spacer tube extending therethrough, a tie rod extending through the spacer and projecting beyond each end thereof and through the outer wall of the leg, each end of the tie rod provided with means engaging the outer surface of the outer wall of the leg holding the two legs snugly seated against the tapered end portions of the spacer tube and against the extreme ends thereof.

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