Sept. 9, 1958 E. F. HAMILTON 2,851,090

CHAIR

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Fig. 1.

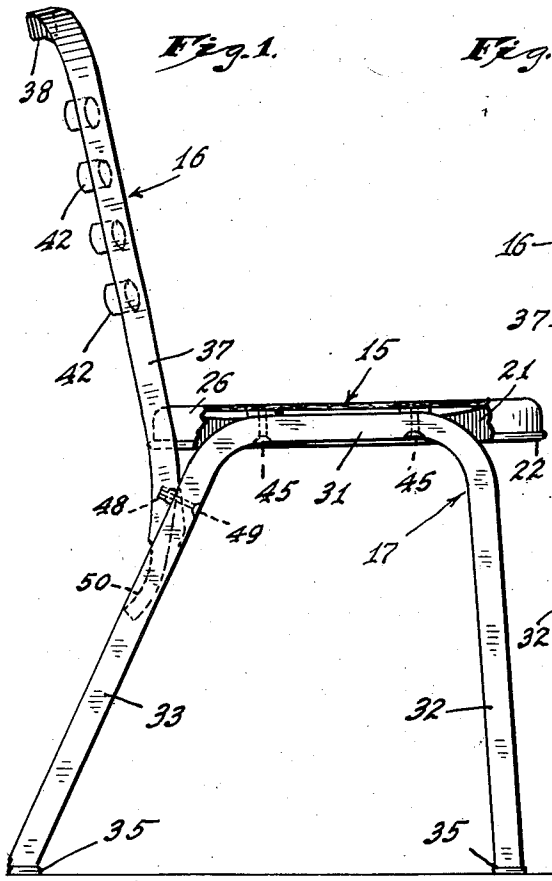


Fig. 2.

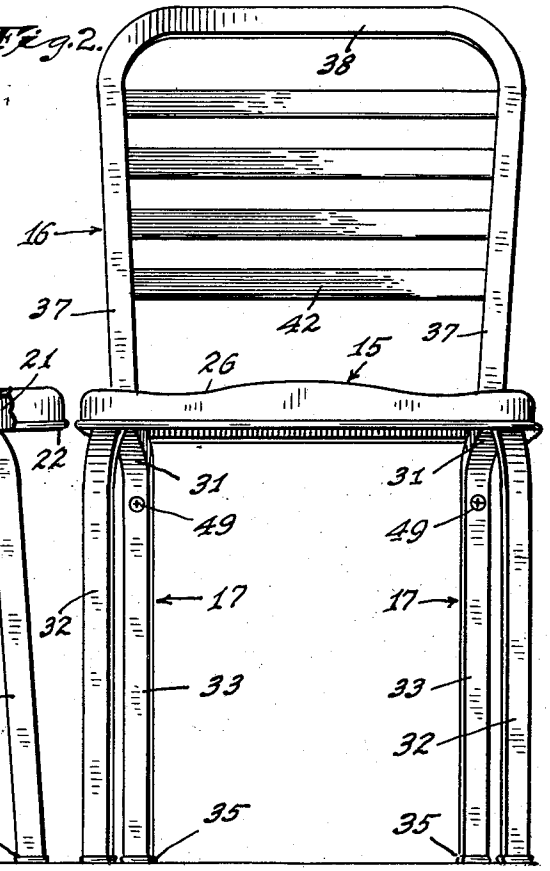
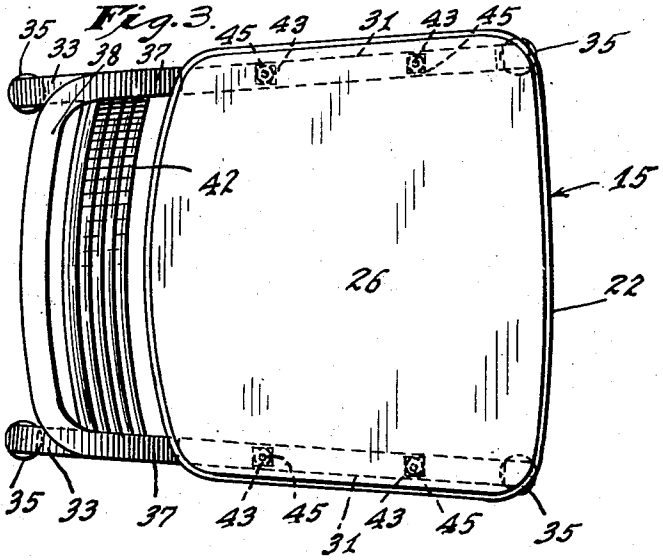


Fig. 3.



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Fig. 5.

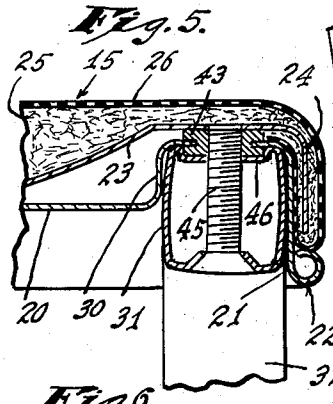


Fig. 4.

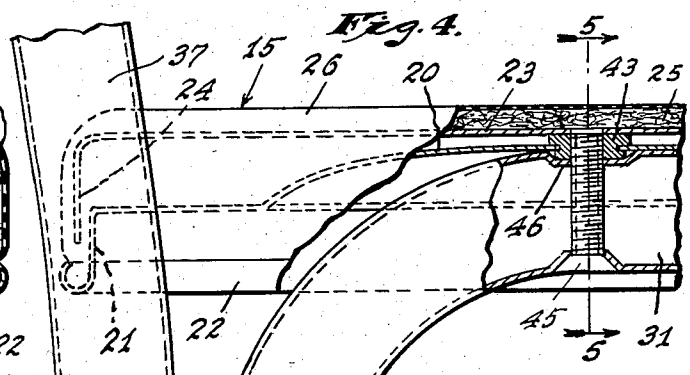
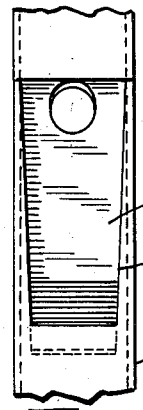


Fig. 6.



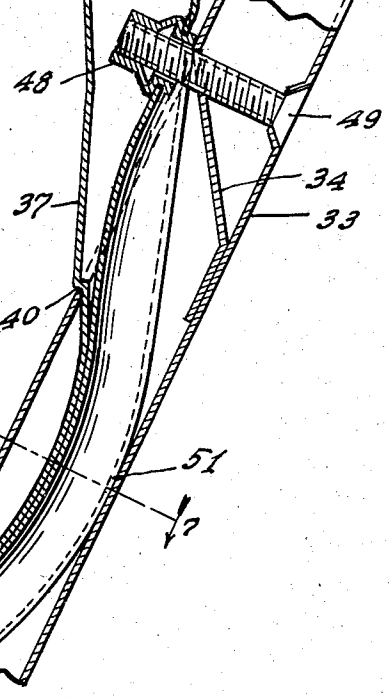
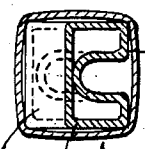


Fig. 7.



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2,851,090

CHAIR

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Application July 31, 1956, Serial No. 601,149

6 Claims. (Cl. 155—194)

This invention relates to a chair and more particularly to a knock-down chair which can be readily assembled. It is an object of the invention to produce a chair of knock-down construction which may be readily erected and which, when erected, will be of attractive appearance and sturdy construction.

A chair embodying my invention comprises four principal parts—namely, a seat, a pair of side members, and a back. In the preferred construction, the back comprises a frame member in the general form of an inverted U desirably provided with cross-slats; each side member is formed of metal tubing also bent into the general form of an inverted U; and the seat rests on the intermediate portions of the U-shaped side members, the remaining portions of which constitute front and rear legs. Below the seat, the rear legs are provided in their rear faces with openings, and the lower ends of the back-frame member enter such openings and extend downwardly within the rear legs to provide a vertically extended bearing contributing to the rigidity of the construction. The seat desirably comprises a sheet-metal seat-pan provided along its sides with downwardly opening grooves receiving and locating the intermediate stretches of the U-shaped side member. For reasons which will become apparent hereinafter the back-frame member and two side members are desirably formed of tubing which is of a generally square cross-section but which is modified from a true square in that the side walls have a slight camber.

In the accompanying drawings, which illustrate the invention:

Fig. 1 is a side elevation of the chair in erected condition with a portion of the seat broken away;

Fig. 2 is a front elevation of the chair;

Fig. 3 is a plan view of the chair;

Fig. 4 is a fragmental side elevation similar to Fig. 1 but on an enlarged scale with portions of the structure broken away to illustrate interior construction;

Fig. 5 is a fragmental vertical section on the line 5—5 of Fig. 4;

Fig. 6 is a fragmental rear elevation of a portion of a rear leg; and

Fig. 7 is a transverse section on the line 7—7 of Fig. 4.

The chair illustrated in the drawing comprises a seat **15**, a back designated in its entirety by the reference numeral **16**, and a pair of side members each designated in its entirety by the reference numeral **17**. The seat **15** (Figs. 4 and 5) includes a sheet-metal seat-pan **20** formed to provide a down-turned peripheral flange **21** terminating at its lower edge in an out-turned bead **22**. A second sheet-metal member **23** is provided with a down-turned peripheral flange **24** telescoping over the flange **21** of the seat-pan. Appropriate padding **25** on the member **23** is covered with any appropriate upholstery material **26**. Preferably, the padding **25** and the upholstery material **26** extends downwardly over the flange **24** and upwardly within such flange so as to be held securely between the two flanges **21** and **24** when the member **23** is in place.

The member **23** and the seat-pan **20** are secured together by any appropriate means such as screws (not shown) passing through the seat-pan and into the member **23**.

Along each side of the seat, the metal of the pan **20** is offset upwardly as indicated at **30** to provide a downwardly opening groove adapted to receive the intermediate portion **31** of the side member **17**, such side member being in the general form of an inverted U to provide, in addition to the intermediate portion **31**, a front leg **32** and a rear leg **33**. Desirably, each of the side members **17** is formed of metal tubing of a generally square cross-section but having side walls possessing a slight convex chamber, as will be clear from Figs. 5 and 7. Below the seat, each of the rear legs **33** is sheared to provide a tongue **34** continuous at its upper end with the metal of the rear leg-wall but separated from such metal along its sides and at its lower end. Such tongue is bent inwardly to extend across the interior of the rear leg with its lower end engaging and extending along the surface of the front leg-wall, as indicated in Fig. 4. If desired, feet **35** may be provided on the lower ends of the front and rear legs.

The back **16** comprises a frame member desirably formed of the same tubular stock as that used in the side members **17** and bent into the form of an inverted U to provide two generally vertical side portions **37** and an intermediate portion **38**. For a substantial distance upwardly from the lower ends of the side portions **37**, such side portions are reduced in cross-sectional dimensions to enter the openings formed in the rear legs **33** by the inward bending of the tongues **34**. In so reducing the cross-section of the lower ends of the side portions **37**, it is convenient to displace the front wall of each inwardly to form a deep channel or groove **38**. In addition to reducing the cross-sectional dimensions of the lower ends of each side portion **37**, I bend each reduced lower end rearwardly in the manner indicated in Fig. 4 and provide it with a shoulder **40** adapted to seat against the lower edge of the opening in the associated rear leg **33**.

To complete the back, I provide cross-slats **42** extending horizontally between the side members **37** of the back frame-member. Conveniently, such cross-slats are tubular and have the form of an elongated oval, their ends being partially collapsed and thereby tapered to enter openings in the side portions **37** with a tight fit. Such slats **42** are inserted in the openings in the side portions **37** before the frame-member is given its final form.

For the purpose of securing the seat to the intermediate portions **31** of the side members, a pair of nuts **43** are secured in the base of each groove **30** in the seat-pan **20**, such nuts receiving screws **45** extending upwardly through the intermediate portion **31** of each side member. To provide clearance for the nuts, the upper wall of such intermediate portion **31** may be offset downwardly as indicated at **46**. Each channel or groove **30** is formed to receive its associated intermediate portion **31** with a snug fit, thus locating such intermediate portion positively in the plane of the seat. The cambered side walls of the tubing from which the side members **16** are formed makes such a tight fit possible in spite of dimensional variations which may occur in manufacture. In other words, the groove **30** is made narrow enough that the associated intermediate portion cannot enter it without some deflection of its cambered side walls, so that tightening of the screws **45** will result in some slight collapse of such walls leaving them bearing resiliently but firmly against the sides of the groove **30**.

To secure the back in place, I provide nuts **48** mounted in the inwardly deflected front wall of the side portions **37**, as indicated in Fig. 4, such nuts receiving screws **49** which extend through the rear legs **33** from the front side thereof.

The formed lower ends of the side portions **37** of the back are so shaped that they fit snugly between the side edges of the opening left in the rear legs **33** by inward deflection of the tongue **34**. The curvature of the lower ends of the side portions **37** is such that when the back is in its final position, the extreme lower end **50** of each side portion **37** will be located adjacent the rear wall of the associated rear leg **33**, while a forwardly convex portion **51** of the collapsed lower end will be located adjacent the front wall of the rear leg **33**. With such arrangement, tightening of each screw **49** will tend to rock the back about the portion **51** urging such portion forwardly while, at the same time, urging the extreme lower end **50** rearwardly. Preferably, the width of the collapsed lower end of each side portion **37** is such that as the screws **49** draw the back into its final position the extreme lower end **50** will be wedged between the cambered side walls of the lower leg **33** and the curved portion **51** will similarly be wedged between such cambered side wall. This feature, coupled with the snug fit of the side portions **37** between the sides of the opening left by inward deflection of the tongue **34** provides, in effect, a vertically extending bearing of relatively great effective length preventing both side members from rocking about the axes of their respective intermediate portions **31**.

As will be obvious, when the chair is in knocked-down condition these various elements may be arranged to form a compact package. To assemble the chair, it is necessary only to place the intermediate portions **31** of the side members in the grooves **30** of the seat, insert the screws **45**, run the lower ends of the side portions **37** at the back into the openings in the rear legs **33**, and insert the screws **49**. Most conveniently, none of the screws **45** and **49** are tightened until all have been inserted, whereupon all of the screws may be successively tightened. Since the snug fit of the intermediate portions **31** of the side members within the grooves **30** locates the side members positively in the plane of the seat, and since the vertically extended bearing between the side portions **37** of the back frame and the rear legs **33** prevents rotation of the side members about the axes of their respective intermediate portions, the chair, when assembled, is exceptionally rigid and sturdy.

I claim as my invention:

1. A chair, comprising a seat, a pair of side members, and a back, each of said side members being of metal tubing bent into the general form of an inverted U to provide a generally horizontal intermediate portion, a front leg, and a rear leg, said seat being secured to the intermediate portions of the side members said rear legs being provided below the seat with openings in their rear walls, said back comprising sides, the lower ends of which extend through said openings and downwardly within the rear legs, and means for securing said side portions to said rear legs.

2. A chair as set forth in claim 1 with the addition that said seat is provided along its side edges with downwardly opening grooves snugly receiving the horizontal intermediate portions of said side members and locating them in the plane of the seat.

3. A chair as set forth in claim 1 with the addition that the tubing from which said side members are formed is generally rectangular in cross-section and has two opposite walls which are cambered, the lower ends of the sides of the back being curved to provide vertically spaced portions one of which is wedged between said cambered sides near the rear of the rear leg and the other of which is wedged between said cambered sides near the front of the rear leg.

4. In a chair, a seat, means including rear legs for supporting said seat, and a back, said rear legs being tubular and being provided below said seat with openings in their rear walls, said back including sides the lower ends of which extend through such openings and downwardly within the rear legs.

5. A chair as set forth in claim 4 with the addition that the tubing from which said rear legs are formed is generally rectangular in cross-section and has two opposite walls which are cambered, the lower ends of the sides of the back being curved to provide vertically spaced portions one of which is wedged between said cambered sides near the rear of the rear leg and the other of which is wedged between said cambered sides near the front of the rear leg.

6. A chair as set forth in claim 5 with the addition of means for securing said sides in said rear legs said means acting at a point above the upper one of said vertically spaced portions and tending to rock the back relative to the rear legs to increase the tightness of the fit of each such portion between said cambered sides.

References Cited in the file of this patent

UNITED STATES PATENTS

2,346,448	Noblitt et al.	Apr. 11, 1944
2,710,053	Hamilton	June 7, 1955

FOREIGN PATENTS

376,251	Great Britain	July 5, 1932
471,625	Canada	Feb. 20, 1951