Feb. 27, 1951 J. B. O'CONNOR 2,543,592

FOOT CONSTRUCTION FOR METAL CHAIRS

Original Filed July 22, 1946

Fig. 1.

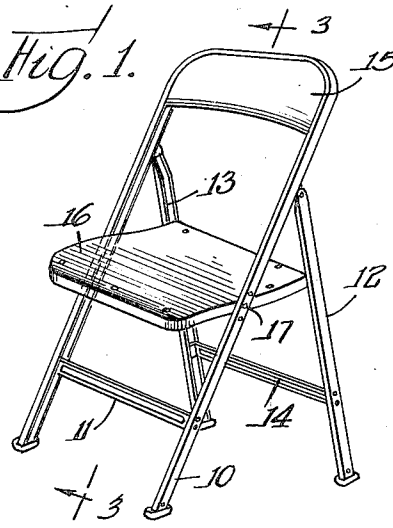


Fig. 4.

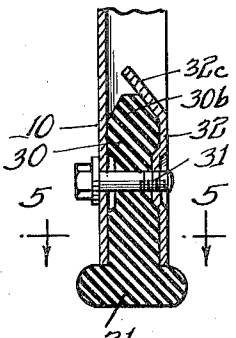


Fig. 5.

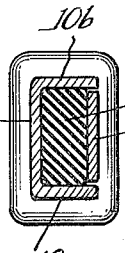


Fig. 2.

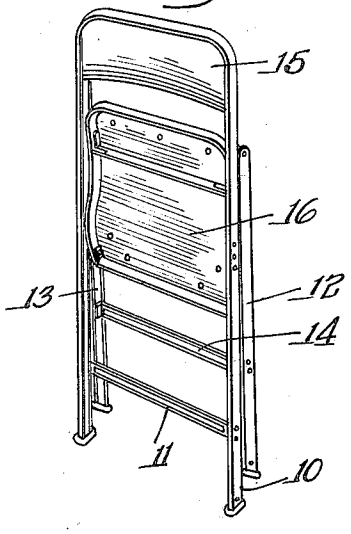
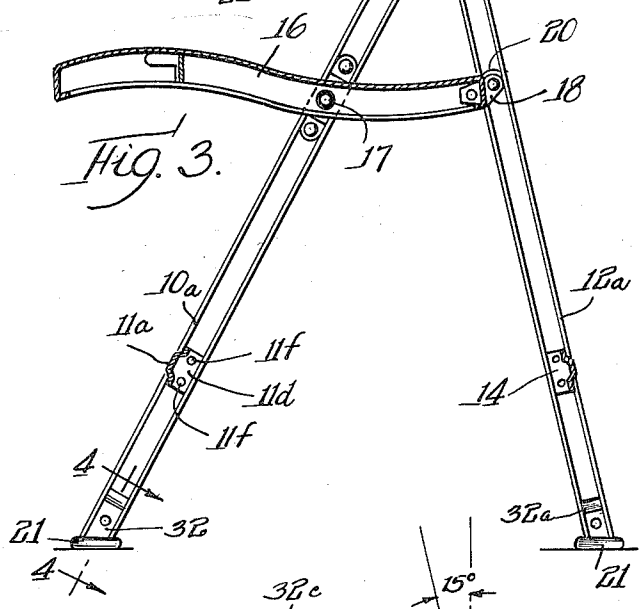


Fig. 3.



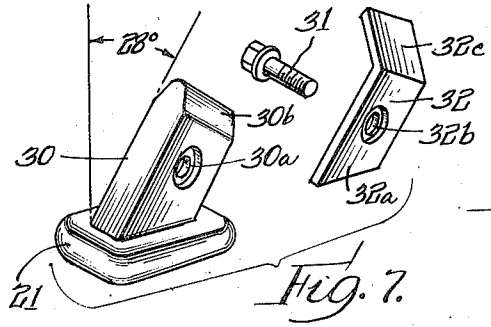


Fig. 7.

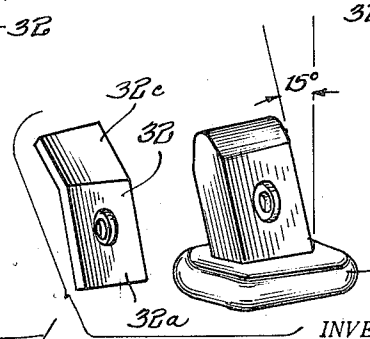


Fig. 6

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FOOT CONSTRUCTION FOR METAL CHAIRS

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7 Claims. (Cl. 45—137)

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This invention relates to a new and improved construction for chairs, and more particularly to a foot construction for a metal chair.

Among the objects of the present invention is to provide a foot construction for a metal chair where in the front and rear leg members are formed of channel-shaped construction and wherein a very simple rugged foot construction is utilized by having the shank portion of the foot substantially fitting and fastened within and between the channelled walls of the leg members of the chair.

Another object of the invention resides in providing a foot member for a chair having channel-like leg members wherein the foot itself is formed with an integral base and shank wherein the shank portion is disposed at an acute angle to the base and is constructed and arranged to provide a relatively broad supporting foot for the channel-like leg member and to provide an integral attaching shank adapted to be disposed substantially contiguously within and between the front and back walls of the channel-shaped legs and adapted to be fastened to a bottom wall of each one of the channel shaped leg members.

These and other objects of the invention will be apparent from a perusal of the following specification when taken in connection with the accompanying drawing, wherein:

Figure 1 is a perspective view of an all metal chair herein preferably shown as a folding type of chair, and showing the feet secured in position at the bottom of the channel members;

Figure 2 is a similar view, showing the chair folded in closed position;

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

Figure 4 is a section taken on the line 4—4 of Figure 3;

Figure 5 is a section taken on the line 5—5 of Figure 4; and

Figures 6 and 7 are perspective views of the front and rear feet with the preferred means for fastening the feet within the channel portions forming the leg members of the chair.

It is to be understood that while the present invention is shown in connection with a folding chair it is equally applicable to a chair of the non-folding type.

The present application is a division of my pending application Serial No. 685,427, filed July 22, 1946, now Patent No. 2,458,095, issued January 1, 1949.

Referring now to the drawings, particularly Figures 1, 2 and 3, the chair in general comprises

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a main frame formed with a metal channel bar 10 bent into U-shape and embraced at its lower ends by a cross brace 11. In cross section the substantially U-shaped frame 10 is channel-shaped, including an intermediate wall and two integral parallel flanges or wall 10*a* and 10*b* extending normally to the intermediate wall 10. As shown in cross section in Figure 3, the front cross brace 11 comprises a length of relatively heavy strip sheet metal in which a central panel portion 11*a* thereof is bent forwardly substantially into the plane of the outer flange 10*a* and wherein the portions of the strip above and below the panel 11*a* are bent or are disposed rearwardly of and within the plane of the rear face of the flange 10*a*. In addition, the two ends 11*d* and 11*e*, only one, 11*d*, being shown, of this cross sectional brace 11 are bent at right angles to the intermediate portions of the strip 11. The brace is preferably of such width that the width of the bent ends is substantially equal to the width of the channel of the leg member 10 so as substantially to fill and fit within the width of the channel. These normally bent integral end portions 11*d* and 11*e* are preferably riveted as at 11*f* to the intermediate wall portion 10*a* of the channel front leg by means of two rivets. In accordance with this construction the lower ends of the legs are rigidified by a brace which has no tendency to turn in the channel.

A pair of shorter channel legs in the form of bars 12 and 13 of cross section similar to that of the front U-shaped frame 10 are provided as rear legs for the chair, except that the panel portion of the rear cross brace 14 is extended outwardly substantially in the plane of the rear face of the rear flange 13*a*, and the upper and lower edge portions of this cross brace 14 are disposed forwardly and within the front face of the rear flange 13*a*. The lower portions of these legs 12 and 13 are thus connected and rigidified by the cross brace 14.

These rear legs 12 and 13 are secured at their upper ends to an intermediate portion of the U-shaped channel member 10, and together form a rear support frame or rear leg structure for the chair. As shown herein, the rear legs 12 and 13 are preferably pivotally connected to the U-shaped channel to provide a folding chair of the type shown in Figures 1 and 2.

Referring to the four legs, it is evident that the intermediate wall 10 of each leg extends in a direction front to back of the chair and that the spaced flanges or walls 10*a* and 10*b* of each leg lie transversely to said direction to provide

front and back walls or flanges for each leg and which flanges assist in absorbing stresses applied to the shanks of the leg in a front to back direction in the use of the chair.

A sheet metal back member 15 is secured to and in the channel 10 at the upper end thereof, and also a preferably sheet metal seat 16 is pivotally secured to the U-shaped channel member 10 by pivots 17. In addition, each rear corner of the seat is provided with a projection 18 carrying a cylindrical lug or antifriction device 19 (not shown) which in the case of a folding chair is slidable within its associated rear channel bar of each of the legs 12 and 13, and wherein in such construction each of the channel bars carries a stop 20 for limiting the upward movement of the associated lug 19. In constructions wherein the legs 12 and 13 do not pivot to the U-shaped bar 10, the connection between the rear end of the seat and the legs is formed differently.

The lower ends of the channel bars 10, 12 and 13 carry attachable feet, affording a firm and solid support construction for the chair. These feet are of simple construction. Each comprises a relatively flat, generally rectangular, elongated base 21 to engage the floor. These base portions preferably have rounded sides and ends, and each such base portion has a substantially centrally disposed, integral, upstanding shank 30 of generally rectangular cross section. Each of these shanks lies at an acute angle to its base portion 21. Each shank 30 is adapted to extend axially of and to lie within the flanges 10*a* and 10*b* of the main channel frames 10 and the channels of the rear legs 12 and 13. In cross sectional dimension the shank portion 30 of each foot is of smaller dimension than the body portion of the foot, and each such integral rectangular shank portion is provided with a substantially centralized fastener receiving opening 30*a*. Each shank is of longer dimensions from front to back than laterally, and one of the sides, to-wit one of the longer two sides, abuts the inner face of the intermediate wall 13. The front and rear faces of the shank abut or lie substantially contiguous to the inner faces of the front and rear flanges 10*a* and 10*b* of each shank so that in use stresses on the shank in a front to back direction of the chair will be resisted not only by the front and back walls 10*a* and 10*b* but also by the fastening pin 31 hereinafter described. Figure 4 shows that the shank portion 30 of the foot fits relatively snugly within the channel-shaped leg portions of the legs. By thus providing a relatively snug fit between the flanged walls 10*a* and 10*b*, the secure fastening of the shank of the foot member within the channel portion is readily assisted throughout substantially a major portion of the length of the shank. Figures 4 and 5 show the manner in which the shank portion 30 of the foot fits snugly within the front and rear flanges of the front and rear legs, being secured in such position by fastening means such as a bolt which passes through the intermediate portion 10 of the channel leg. The angularity between the base 21 of the foot and each shank 30 conforms to the angularity between the floor and the respective front and rear leg members, as the case may be. Two sets of feet, having shanks of different angularity, are accordingly provided, the feet for the front channel being interchangeable from left to right, and the feet for the rear channels being interchangeable between the two legs for facilitating assembly. The shanks 30 of the front feet lie at an angle of inclination of substantially twenty-eight degrees, more or less, to the plane of the upper surface of the base 21 thereof, while the shanks of the rear feet lie at an angle of substantially fifteen degrees, more or less, to the plane of the upper faces of the base members of the rear feet. It will be noted from an examination of Figure 5 that the base 21 is of considerably greater cross sectional area than the cross sectional area of each leg channel, thereby not only giving a greater superficial support area to prevent abrasion of the floor, but also whereby if desired the bottom of the channel members may lie, if desired, in abutting contact relation with the upper face of the base member when fastened in position, although obviously it is not absolutely necessary that the lower edges of the leg channel members lie in contact with the upper faces of the base members of the feet, but in any event the formation of the feet with the outstanding portions that lie beyond the bottom edges of the channel members of the legs provides a very snug construction and enhances the appearance of the feet of the chair.

Means is provided for securing the shank members telescopingly within the channel portions of the leg members. In the present instance I prefer to use supporting clips 32, each of which has a bottom portion 32*a* corresponding in cross section to the shank portion 30 of the foot to which it fastens, and each at such portion being provided with an opening 32*b* to register with the opening 30*a* of such shank portion of the foot, and through which a bolt or rivet or other fastening member may pass, whereby the clip 32 is clamped snugly against the foot within the channel members. In the clip construction there is also provided an upper portion 32*c* which is bent diagonally to the body portion 32*a*, so as to overlie a diagonal portion 30*b* of the top of the shank of the foot, whereby to aid in the clamping effect.

In the present invention I prefer to form the feet and integral shanks of rubber or any other compressible or sound-deadening material, so that the feet will not abrade the floor on which they rest, although the invention is not limited to the type of material of which the feet are made. The entire foot section is assembled by placing the shank of the foot within the channels of the bottom portions of the leg members, placing the clip in position, and then threading the bolts or pins 31 therethrough or riveting the same to hold the feet in assembled relation to the legs and the tops of the feet in more or less abutting relation to the bottom of the leg channels.

The feet 21 are rounded to present a better appearance and to eliminate the change of damaging the floor when the chair is dragged across the floor. The foot in general is designed for ease in attaching during assembly operations and permits convenient replacement if for any reason it is necessary to replace the feet. The foot is designed to have a positive means of attaching the shank to the leg of a chair by means of the bolt or other fastening member 31, and at the same time to permit easy replacement when necessary. The retaining clip 32 is formed diagonally over the top as at 32*c* to eliminate excessive accumulation of dust or dirt at this point. If the surface at this point were flat, dirt would accumulate at this point and would be rather difficult to remove. It is of course understood that any desired fastening member, other than the fastening member 31, may be utilized.

It is apparent that many widely different embodiments of this invention may be made with-

out departing from the spirit and scope thereof, and therefore it is not intended to be limited except as indicated in the appended claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In combination with a chair leg of channel-shaped formation providing a forwardly disposed flange-like wall, a rearwardly disposed flange-like wall substantially parallel to the forwardly disposed flange-like wall, and an intermediate side wall joining the said forwardly and rearwardly disposed flange-like walls, the provision of an integral foot formed of compressible material disposed at the lower end of said leg, said foot comprising a base portion of cross sectional area sufficiently larger than the periphery of the lower end of the leg to provide a shoulder against which the lower ends of the walls of said leg are disposed in substantially abutting relation, said base portion including an integral shank portion extending upwardly relative to the base portion, and securing means including a clip having a cross section fitting within the open space between the free edges of said forwardly and rearwardly flange-like walls, and fastening means passing through registering openings in one wall of the leg and in the shank portion and the clip for holding the same in assembled relation.

2. In combination with a chair leg of channel-shaped formation providing a forwardly disposed flange-like wall, a rearwardly disposed flange-like wall substantially parallel to the forwardly disposed flange-like wall, and an intermediate side wall joining the said forwardly and rearwardly disposed flange-like walls, the provision of a foot member disposed at the lower end of said leg and including a base and an integral shank portion, the shank portion being located in the lower end of the channel-shaped leg between the forwardly and rearwardly disposed flange-like walls thereof and having spaced front and rear wall surfaces extending upwardly between the said flange-like walls of the leg and and one of said wall surfaces being disposed generally parallel to and having an extended portion abutting the inner face of the adjacent flange-like wall of the leg, and fastening means passing through said shank portion and through one of the walls of said leg in which said foot is mounted.

3. In combination with a chair leg adapted for fore and aft inclined installation and being of channel-shaped formation providing a forwardly disposed flange-like wall, a rearwardly disposed flange-like wall substantially parallel to the forwardly disposed flange-like wall and an intermediate side wall joining the said forwardly and rearwardly disposed flange-like walls, the provision of a foot member disposed at the lower end of said leg and including a base and an integral shank portion inclined with respect to said base and located in the lower end of the channel-shaped leg between the forwardly and rearwardly disposed flange-like walls thereof and presenting spaced front and rear wall surfaces extending upwardly between the said flange-like walls of the leg, said flange-like walls of the leg abutting the base and forming therewith internal obtuse and acute angles, one of the wall surfaces of said shank portion having an extended portion abutting the inner face of the flange-like wall of the leg making the acute angle with said base, and fastening means passing through said shank portion and through one of the walls of the leg in which the foot is mounted.

4. In combination with a chair leg of channel-shaped formation providing a forwardly disposed flange-like wall, a rearwardly disposed flange-like wall substantially parallel to the forwardly disposed flange-like wall, and an intermediate side wall joining the said forwardly and rearwardly disposed flange-like walls, the provision of a foot disposed in the lower end of said leg and including an integral shank portion positioned in the lower end of the leg between the forwardly and rearwardly disposed flange-like walls thereof, said shank portion having a wall surface extending for a substantial portion of its length substantially parallel to and substantially contiguous with one of the flange-like walls of the leg, and a pin passing through the shank portion and through a wall of the leg for holding the foot in position within the bottom of the leg.

5. In combination with a chair leg of channel-shaped formation providing a forwardly disposed flange-like wall, a rearwardly disposed flange-like wall substantially parallel to the forwardly disposed flange-like wall, and an intermediate side wall joining the said forwardly and rearwardly disposed flange-like walls, the provision of a foot in the lower end of said leg and including an integral shank portion extending upwardly into the space between the said forwardly and rearwardly disposed flange-like walls of said leg, said shank portion being somewhat rectangular in cross section and having a greater front to back dimension than a side dimension, and having substantially parallel front and back wall surfaces lying within and substantially parallel to the adjacent surfaces of the forwardly and rearwardly disposed flange-like walls of said leg, and fastening means passing through the shank portion and through the said intermediate side wall of the leg for securing the shank portion in position within the leg.

6. In combination with a chair leg of channel-shaped formation providing a forwardly disposed flange-like wall, a rearwardly disposed flange-like wall substantially parallel to the forwardly disposed flange-like wall, and an intermediate side wall joining the said forwardly and rearwardly disposed flange-like walls, the provision of a foot member disposed in the lower end of said leg and including a base and an integral shank portion, said shank portion being positioned in the lower end of said leg between the forwardly and rearwardly disposed flange-like walls thereof and having spaced front and rear wall surfaces extending upwardly therebetween with the front wall surface of said shank portion disposed generally parallel to the inner face of the forwardly disposed flange-like wall of the leg and having an extended portion abutting the inner face of said forwardly disposed flange-like wall, and fastening means passing through said shank portion and through one of the walls of the leg for securing the same together, and said shank portion having means at the top thereof for deflecting dust and dirt laterally and downwardly from the top thereof.

7. In combination with a chair leg of channel-shaped formation providing a forwardly disposed flange-like wall, a rearwardly disposed flange-like wall substantially parallel to the forwardly disposed flange-like wall, and an intermediate side wall joining the said forwardly and rearwardly disposed flange-like walls, the provision

of a foot member disposed in the lower end of said leg and including a basal portion and an integral shank portion extending upwardly between the forwardly and rearwardly disposed flange-like walls of the leg, said shank portion including front and rear spaced wall surfaces disposed longitudinally within the lower portion of the leg and substantially contiguous to and within the adjacent surfaces of the said flange-like walls of the leg, and a pin passing through said shank portion and through a wall of the leg in which the shank portion is mounted to hold the foot in position within the said leg, the basal portion of said foot being of greater cross sectional dimension than the periphery of the bottom portion of the leg whereby the bottom edges of the intermediate side wall and the said flange-like walls of the leg overlie and rest upon the top surface of the said basal portion.

JOHN B. O'CONNOR.

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