Jan. 29, 1946. C. L. DEWEY 2,393,757

METALLIC FURNITURE

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Fig. 2

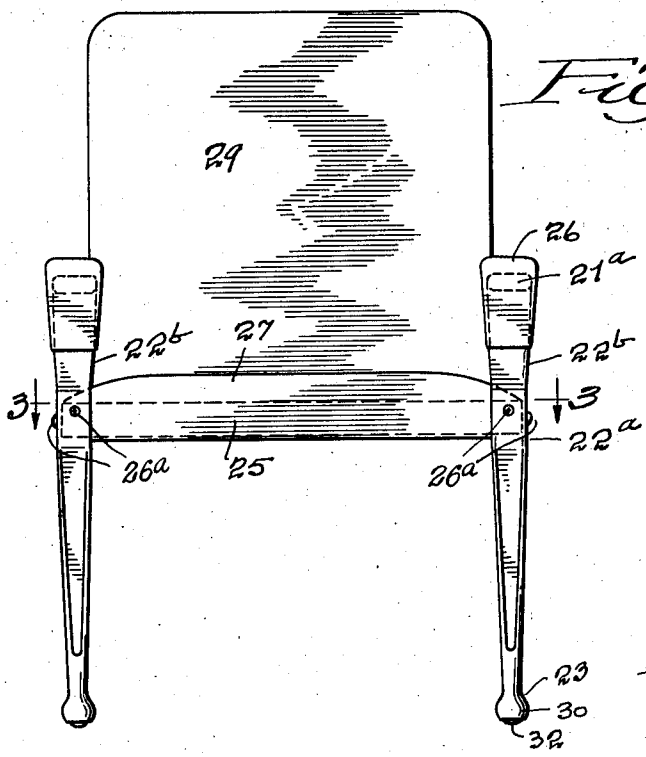


Fig. 1

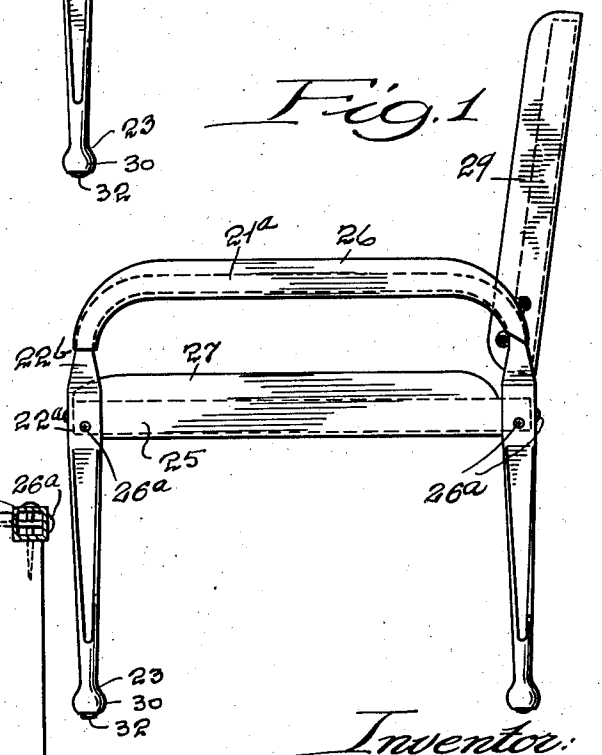
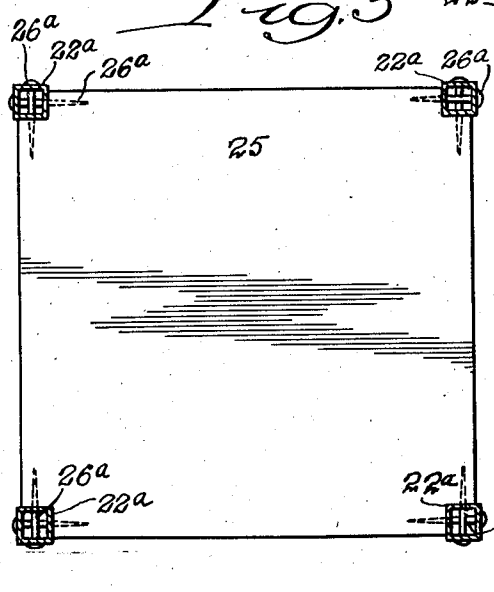


Fig. 3



Inventor:
Clarence L. Dewey,
By Dominger & Fanning.
Attorneys.

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Fig. 4.

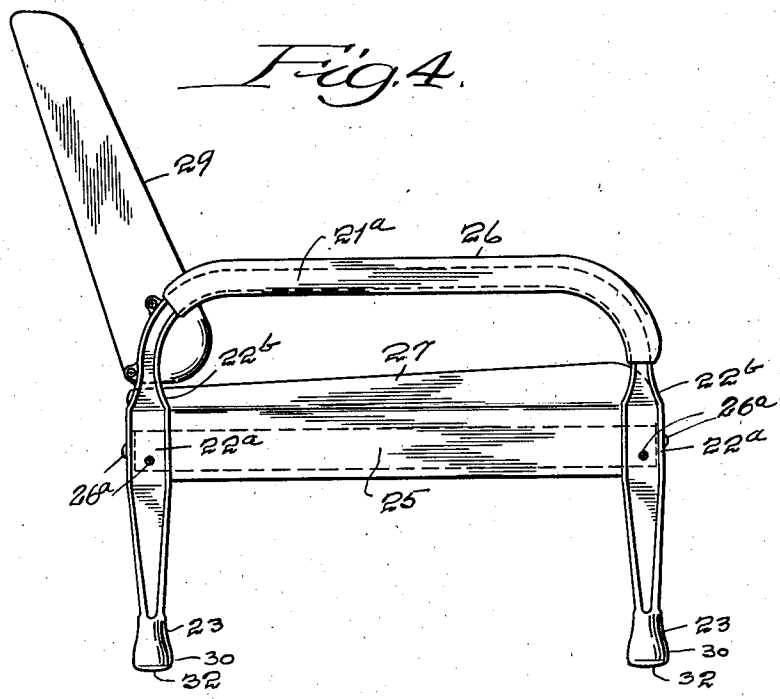
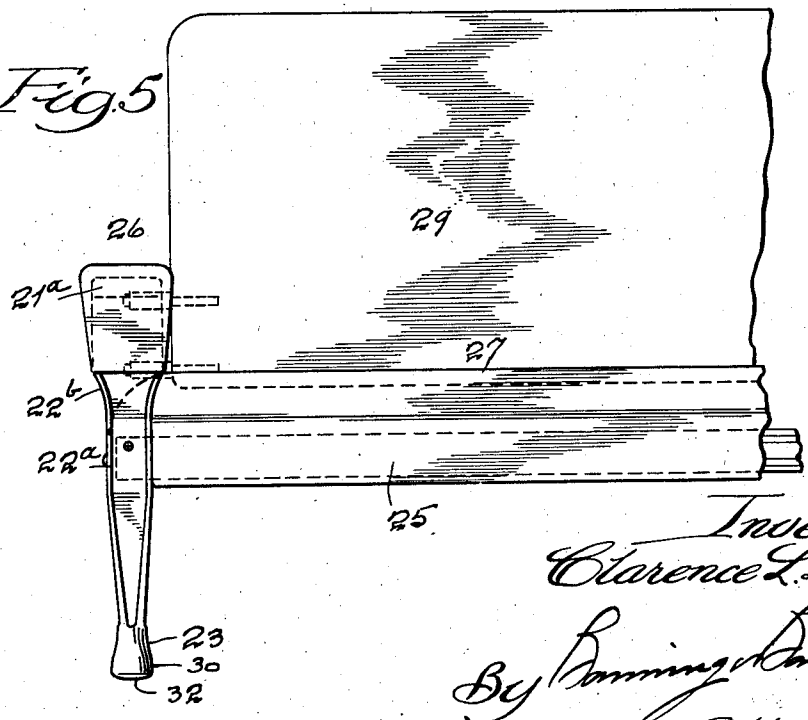


Fig. 5



Inventor:
Clarence L. Dewey,
By Banning & Banning
Attorneys.

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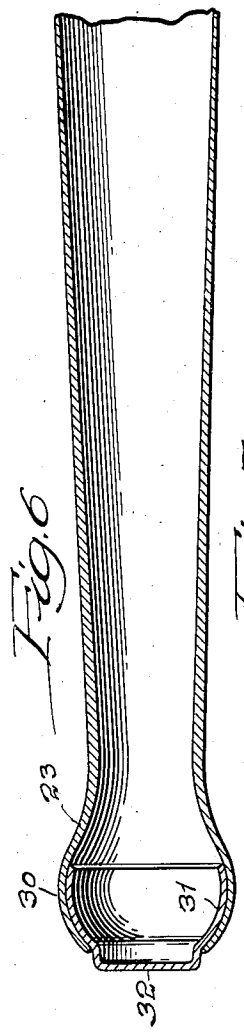


Fig. 6



Fig. 7

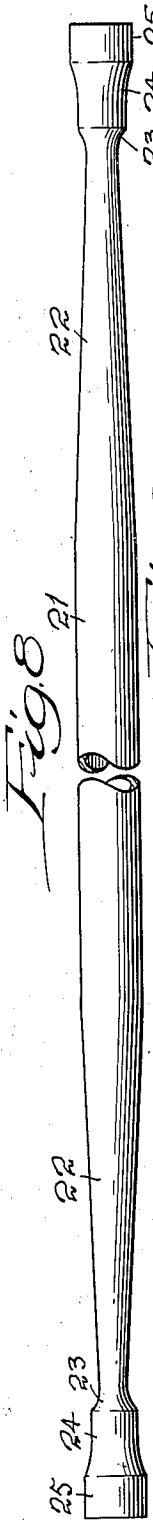


Fig. 8

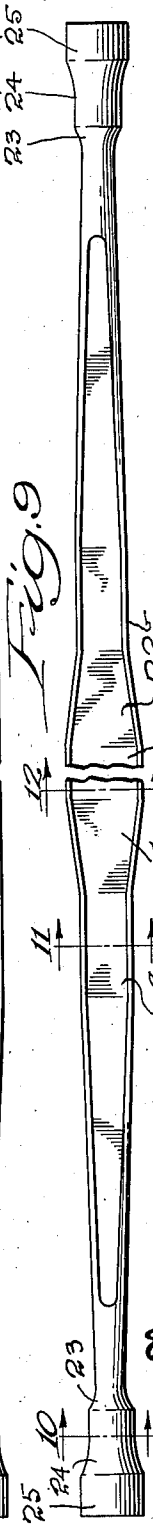


Fig. 9



Fig. 12



Fig. 11



Fig. 10

Inventor:
Clarence L. Dewey,
By Banning & Banning
Attorneys.

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UNITED STATES PATENT OFFICE

2,393,757

METALLIC FURNITURE

Clarence L. Dewey, Elkhart, Ind.

Application August 3, 1942, Serial No. 453,455

9 Claims. (Cl. 155—194)

The present invention is directed to articles of furniture such as chairs, divans, sofas or the like, which are constructed upon a metallic frame with the seat and back suitably upholstered in any desirable manner.

In the manufacture of furniture of this general character it has been customary in the past to form the frame from sections of tubing of uniform cross section throughout and bent to the required shape, but this method of building furniture not only fails to distribute the metal of the tubing in the most desirable manner to resist stresses with a minimum of weight, but is also unsightly and monotonous in appearance, in that the lack of diversity in the configuration of the legs, arms and other portions of the structure tends to impart to the furniture a displeasing mechanical regularity which renders it impossible to design and style the furniture in such a way as to harmonize with artistic and tasteful surroundings.

The present invention is directed primarily to the proper configuring of the structural elements which enter into the framing of the furniture in such a way as to advantageously distribute the metal and at the same time introduce pleasing features of design which may be varied within a considerable range so that variety rather than monotonous uniformity may be obtained in furniture of this character.

This is particularly the case in connection with the legs which may be tapered downwardly toward the feet of the chair or other articles so that lightness in appearance combined with adequate strength will be obtained.

Further objects and details of the invention will appear from the description thereof in conjunction with the accompanying drawings, wherein:

Fig. 1 is a side elevation of a chair or similar article of furniture embodying the features of the present invention;

Fig. 2 is a front elevation thereof;

Fig. 3 a plan view of the seat of the chair;

Fig. 4 a side elevation of a divan or the like;

Fig. 5 a front elevation of a portion thereof;

Fig. 6 a sectional elevation of the lower end of one of the legs;

Figs. 7, 8 and 9 three views of a section of tubing showing the tubing during three stages in its fabrication, and;

Figs. 10, 11 and 12 three cross sectional views of the configured tubing of Fig. 9 taken on the lines 10—10, 11—11 and 12—12 respectively.

The tubing employed in the building of the furniture of the present invention is first subjected to a tapering and configuring operation which may be advantageously performed by the machine and method set forth and described in the Dewey patent, No. 2,265,723, issued December 9, 1941.

In conformity with the method of the Dewey patent, a length 20 of cylindrical tubing of proper diameter and gauge as indicated in Fig. 7 is subjected to a configuring operation which results in the formation of a unit section which is of circular cross section throughout but of varying diameter. The unit section comprises a center body portion 21 which terminates at each end in a forwardly tapering section 22 which at its terminus is offset to afford a shoulder 23 merging into a neck portion 24 which latter is offset and merges into a terminal portion 25 of equal diameter with the section 21. In the completion of the foot of the leg as will hereafter appear the neck and terminal portions are cut off and discarded.

The unit section thus formed is symmetrical in that each end portion is the counterpart of the other, but it is not essential that such symmetry be maintained especially in cases where it is desired to have the front leg of the chair of greater length than the rear legs, nor is it essential that the cross sectional areas be maintained uniform at each end since it may be desirable, for purposes of styling or otherwise, to vary the configuration to conform to the intended design. However, for the present purposes it will suffice to describe a formation in which the front and rear legs are counterparts in length and in design throughout, and the unit section of tubing is configured accordingly.

After the unit section has been configured to the shape above described, it is subjected to further fabrication by a flattening process which flattens the center or body portion to the cross sectional configuration indicated at 21*a*, which produces a relatively broad flattened tubular structure which will ultimately be bent to arch formation to afford the connecting arm for the unified structural element which affords the front and rear legs and connecting arm on one side of the chair.

The flattening is more extreme in the body section 21*a* but the squaring continues throughout the inner portion of each tapering section to produce a paneled upper leg portion 22*a* which is squared in cross section as will appear from Fig. 11 but with rounded corners, and the paneling effect in diminishing degree will continue

outwardly toward the end of the leg but will terminate short of the neck **23** in which region the previous circular formation is retained.

The mergence of the widely distended and flattened body section, which later constitutes the connecting arm of a chair, with the upper portions of the squared tapered legs of less width but greater depth than the body section, affords shoulders **22***b* which taper inwardly from the edges of the body section as viewed in Fig. 9 to meet the associated leg but diverge outwardly from the opposed flat faces of the body section to conform to the differential in cross section between the body section and the legs, which constitute extensions therefrom, and this is desirable in order to provide in the completed chair frame a pair of broad flat arms which arch downwardly at their ends and merge through the shouldered portions into tapering legs, which are substantially square in cross section throughout the major portion of their lengths, although it will be understood that the four sided paneling and tapering here shown serve merely for purposes of illustration and that various polygonal panel designs other than the four faces of a square may be given and that such panels may be combined with circular areas in any way which harmoniously conforms to the pattern or period effect desired by the designer.

The leg and connecting arm structure suitably configured is transformed into an element in the chair frame by bending the ends of the flattened body section at points immediately adjacent to the shouldered connecting sections, to give to the structure as a whole an arch formation with the front and rear legs standing vertically or nearly so, and with the flattened intermediate body section transformed into a broad arm which may be enclosed by a covering of upholstery **26** or otherwise finished in any desired manner.

The chair frame as a whole comprises two arched frame elements of the character described which are preferably united by a square seat frame **25** of wood or other suitable material which is secured by nails **26***a* or other attaching means to the upper portions of the legs to afford a complete chair frame, all portions of which are rigidly united together.

The seat frame affords a support for a seat **27** of upholstery or the like which seat fits down into and is supported upon the frame and which may be upholstered or finished in any desired manner. The chair is completed by the provision of a back **29** which is suitably secured between the frame elements, but it will be understood that the finish and back of the chair or other article of furniture constitute no portion of the present invention and may be changed or modified as desired.

The construction of the feet of the legs is best illustrated in Fig. 6, from which it will appear that the excess material at each end of the configured tubing is cut off at a point beyond the shoulder **23** to afford a sufficient length of material to be spun or spherically rolled over to afford an enlarged foot socket **30** for the reception of a cup-shaped tread or base member **31** having a flat floor contacting bottom **32** which protrudes through and beyond the end of the cup socket in position to make contact with the floor. The spherically rounded walls of the cup-shaped base member **31** and the foot socket **30** engage one another throughout sufficiently extended range to prevent displacement of the parts, but if desired, the base and socket may be welded together or otherwise united.

It is not intended however that the claims be limited to a foot formed in precisely the manner shown, since if desired the entire foot portion of the leg may be integrally formed therewith by rolling or spinning in the metal to the extent required to make direct contact with the floor.

In Figs. 4 and 5 I have shown the same structural formation applied to a divan or the like, but the formation of the parts, save in matter of proportions, is substantially identical with that previously described, so that further description is deemed unnecessary. It will further be understood that the examples here shown serve merely for purposes of illustration, and that numerous modifications in detail, in the shaping and proportioning of the arched structural elements, and in the styling and paneling of the legs, may be made without departing from the spirit of the invention.

Flattening the sides of the legs to give a paneled effect to a portion of the exposed surfaces, in conjunction with the rounded corners shown, serves to multiply and diversify the highlights reflected from the surface, especially in cases where a bright finish is employed, and this, together with the tapering and shaping of the legs, greatly adds to the attractiveness of the design, while at the same time by distributing the metal in the manner shown, ample strength and rigidity at all points are secured with a minimum weight of metal and to a much greater degree than is possible in the use of tubing of uniform diameter throughout which is commonly employed at the present time in the manufacture of metallic furniture.

The invention is one which enables the basic configuration to be secured by the employment of the machine and method of the Dewey patent previously referred to, which imparts the basic configuration and wall thickness to a continuous section of tubing, after which, by merely flattening the section at the required points, and spinning or rolling down the foot portion and bending the arm to get the desired arch formation, the section is transformed into a structural element of great strength and rigidity, which may be readily incorporated into the frame of a chair or the like, so that the entire structure can be produced with a minimum of fabrication and in a multiplicity of different designs, and without the necessity for employing extraneous means for fastening the parts together.

Moreover, the method employed enables the wall thickness to be advantageously varied, as for instance, by progressively increasing the wall thickness toward the lower end of the leg as indicated in Fig. 6, so that the maximum thickness will occur at the base of the shoulder **23** which is the point of minimum diameter, after which the metal of the globular foot socket is thinned down to embrace the cup-shaped base member. By thus distributing the metal, an appearance of light weight is attained without sacrifice of adequate strength to resist all stresses to which the article of furniture may be subjected.

I claim:

1. A structural element for metallic furniture in the form of a continuous section of tubing tapered toward its end portions and having the end portions bent downwardly to provide spaced legs connected by an arched arm portion, the arm portion being flattened to present a relatively great diameter horizontally and a relatively small

diameter vertically, and the tapered leg portions having flat faces throughout at least a portion of their length to present a paneled effect.

2. A structural element for metallic furniture in the form of a continuous section of tubing tapered toward one end portion and having the end portions bent downwardly to provide spaced legs connected by an arched arm portion, the arm portion being flattened to present a relatively great diameter horizontally and a relatively small diameter vertically, and the tapered leg portion having a flat face throughout at least a portion of its length to present a paneled effect, the lower terminus of such leg being enlarged and spherically rounded to provide a foot portion.

3. A structural element for metallic furniture in the form of a continuous section of tubing tapered toward one end portion and having the end portions bent downwardly to provide spaced legs connected by an arched arm portion, the terminus of the tapered leg being enlarged and spherically rounded to provide a foot portion, and a cup-shaped socket within such foot portion and protruding therefrom to make floor contact.

4. A structural element for metallic furniture in the form of a continuous section of tubing tapered toward one end portion and having the end portions bent downwardly to provide spaced legs connected by an arched arm portion, the arm portion being flattened to present a relatively great diameter horizontally and a relatively small diameter vertically, the terminus of the tapered leg being enlarged and spherically rounded to provide a foot portion, and a cup-shaped socket within such foot portion and protruding therefrom to make floor contact.

5. A structural element for metallic furniture in the form of a continuous section of tubing tapered toward one end portion and having the end portions bent downwardly to provide spaced legs connected by an arched arm portion, the arm portion being flattened to present a relatively great diameter horizontally and a relatively small diameter vertically, and the tapered leg portion having a flat face throughout at least a portion of its length to present a paneled effect, the lower terminus of such leg being enlarged and spherically rounded to provide a foot portion, and a cup-shaped socket within such foot portion and protruding therefrom to make floor contact.

6. A structural element for metallic furniture in the form of a continuous section of tubing tapered toward its end portions and having the end portions bent downwardly to provide spaced legs connected by an arched arm portion, the lower terminus of each leg being enlarged and spherically rounded to provide a foot portion, the wall thickness of the legs progressively increasing to a maximum at the juncture with the foot portion and thereafter being reduced within the enlarged foot portion.

7. A structural element for metallic furniture in the form of a continuous section of tubing tapered toward its end portions and having the end portions bent downwardly to provide spaced legs connected by an arched arm portion, the arm portion being flattened to present a relatively great diameter horizontally and a relatively small diameter vertically, the lower terminus of each leg being enlarged and spherically rounded to provide a foot portion, the wall thickness of the legs progressively increasing to a maximum at the juncture with the foot portion and thereafter being reduced within the enlarged foot portion.

8. A structural element for metallic furniture in the form of a continuous section of tubing tapered toward its end portions and having the end portions bent downwardly to provide spaced legs connected by an arched arm portion, the arm portion being flattened to present a relatively great diameter horizontally and a relatively small diameter vertically, and the tapered leg portions having flat faces throughout at least a portion of their lengths to present a paneled effect, the lower terminus of each leg being enlarged and spherically rounded to provide a foot portion, the wall thickness of the legs progressively increasing to a maximum at the juncture with the foot portion and thereafter being reduced within the enlarged foot portion.

9. As an article of manufacture, a furniture frame consisting of two metallic tubular structural elements each of arch-shaped formation and comprising a connecting medial portion constituting an arm relatively broad on its horizontal diameter and relatively shallow on its vertical diameter, the arm portion at each end being bowed downwardly to provide front and rear downwardly tapered legs, having flat faces throughout at least a portion of their lengths to produce a paneled effect, each leg terminating in an enlarged foot, and a seat frame rigidly connected with both legs of each structural element.

CLARENCE L. DEWEY.