Aug. 26, 1930. B. M. STANNARD 1,774,190

METAL CHAIR UPHOLSTERY

Filed Aug. 27, 1928 2 Sheets-Sheet 1

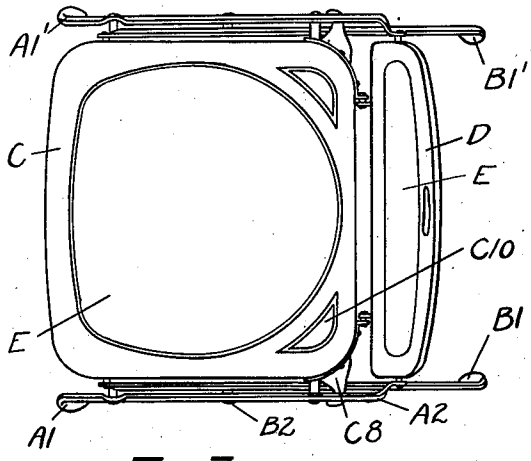


FIG. 3

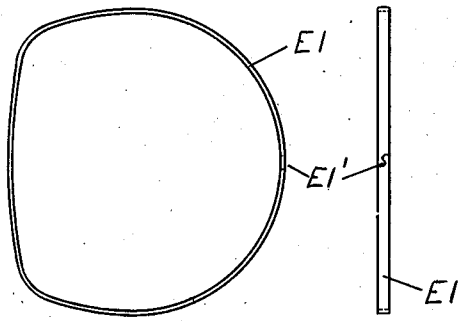


FIG. 4

FIG. 5

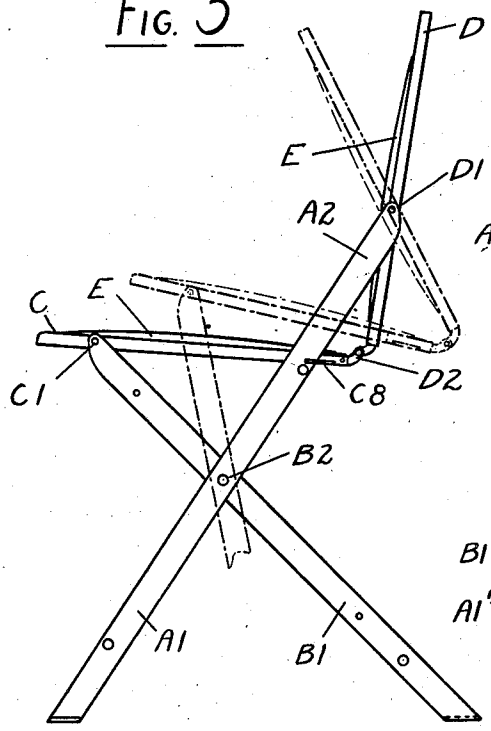


FIG. 1

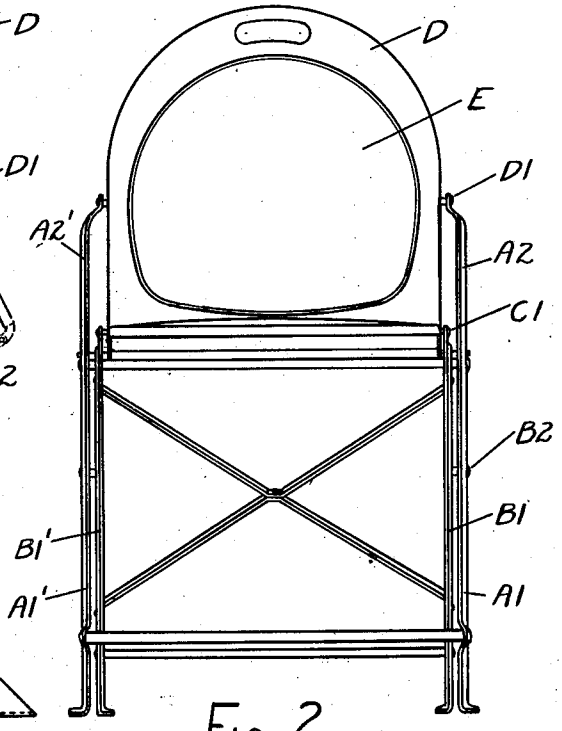


FIG. 2

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METAL CHAIR UPHOLSTERY

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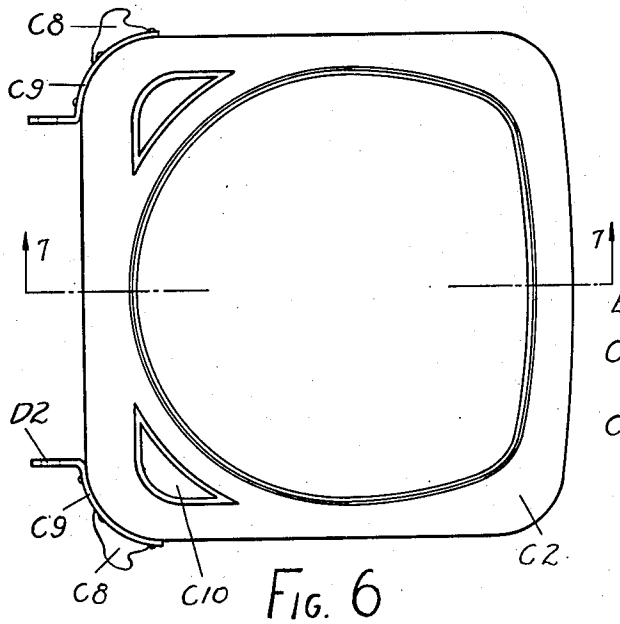


FIG. 6

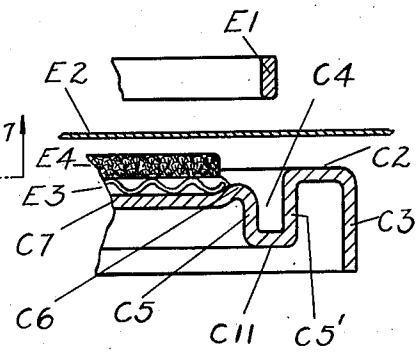


FIG. 8

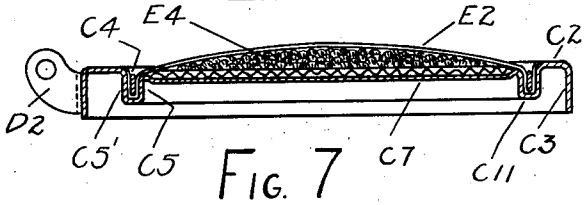


FIG. 7

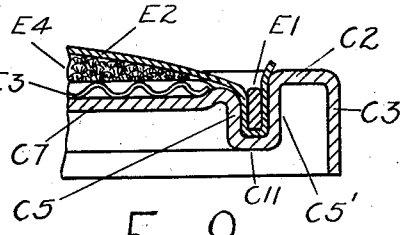


FIG. 9

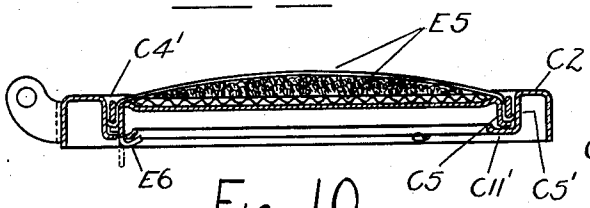


FIG. 10

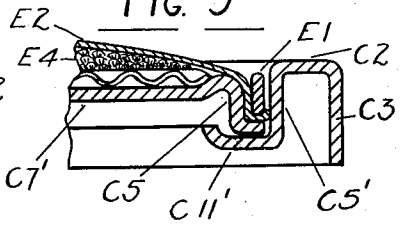


FIG. 11

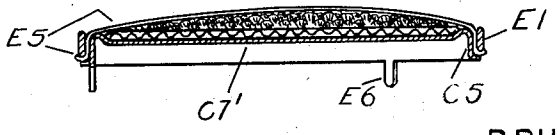


FIG. 12

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Patented Aug. 26, 1930 1,774,190

UNITED STATES PATENT OFFICE

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METAL-CHAIR UPHOLSTERY

Application filed August 27, 1928. Serial No. 302,173.

The present invention relates to embellishing means for paneled metal chair members and more particularly such as are provided with similarly formed upholstered seat and back members of the folding type. An object is to provide for a chair or other furniture parts to which cushioned upholstery fabric may be neatly and firmly secured in an improved and novel manner by the use of a sectional panel frame providing for an annular body-contacting face and into which frame there is inserted an upholstered pad plate adapted to be secured in place to said face annulus. A further object consists in constructive features that facilitate rapid and economical securement of said upholstery on a productive scale, and when applied to a collapsible chair, admit of folding the complementary upholstered back and seat faces upon each other for protective purposes. Embodied herein are further structural details designed to accomplish the foregoing and related purposes, all of which will be more explicitly set forth hereinafter.

The devices herein disclosed are especially applicable to upholstery pads adapted to be mounted upon a sheet-metal understructure such as provides for a relatively non-stretchable reenforcing plate or other fabric cover backing means that is purposely kept substantially rigid against transverse loading. The rim of said plate may be embraced by a depending flange or rabbet-like element adapted to cooperate with my upholstery attaching means. A cushioning medium may be placed upon the seating face of said plate and a fabric cover applied thereover. The present improvements are primarily directed to perfecting an effective but simple endless hoop means for securing attractively patterned upholstery fabric to said metal understructure, a properly sized hoop being tightly forced over said rabbet and serving to clamp the fabric margin therebetween. Said hoop is initially shaped up to closely conform with the backing rabbet contour and is given a suitable strap heft and diametral size such as will cause a substantial hoop stretch while it is being forced into place. As will be understood, an endless binding device of this character is intended to remain permanently associated about the fabric until it may become necessary to reupholster the chair seat.

It is preferred during installation, to place the cover fabric in direct contact with the innermost surface of the embracing hoop and thus afford an adequate frictional drag on part of the interposed fabric while the ring is being simultaneously sprung down evenly all around the fabric border. My hoop is made to perform a double function in that it serves both to stretch and to maintain the fabric cover in such relation. The resulting ample initial stretching causes the spanning fabric portion to be tautly and uniformly tensioned in all directions and thus better counteracts tendency on part of the attached upholstery to develop slackness.

Due to inherent filler strand restraint, certain kinds of fabrics have heretofore been found rather difficult to employ in a satisfactory manner as seat upholstery covers; this is especially characteristic of dope coated upholstery material such as pyroxylin, fabrikoid and the like impregnated fabrics which my method is particularly adapted to handle advantageously.

By virtue of my upholstery appliances, ultimate fabric sag that is to say any abnormal loosening up, may be obviated by imparting sufficient initial stretch to the cover while it is being applied in place, although it is to be understood that owing to fabric behavior, a portion of such prestretching is likely to become dissipated with lapse of time. As applied to a medium weight of upholstery stock, an initial stretch of from 5 to 15 pounds per inch of fabric width generally suffices to produce the results contemplated. The stipulated initial degree of fabric tension is found ample to maintain a seat cover in a smooth and unwrinkled condition capable of withstanding prolonged hard usage.

This improved mode of assembly at the same time serves to compress the marginal edges of the interposed filler medium toward the underlying crown plate. A rim-bead may be raised out of the crown plate periphery and this not only serves to center the cushioning medium during the upholstery

process but facilitates slippage on part of the fabric while it is being stretched thereover. Upon completing the pad installation, the surplus fabric is trimmed closely adjacent to the outermost ring contour.

It is further emphasized that the cooperative relation existing between said sealing band and the cushioned plate is such that my hoop-like binding means does not at any time exert a pull upon the fabric that falls in excess of the cited initial stretching tension given to the pad cover during its installation, the reason being that the fabric tension is relieved rather than augmented whenever an upholstered seat as equipt with my improvements becomes fully loaded in service; it will be apparent therefore that said reenforcing plate or relatively rigid backing acts to prevent any undue pull strain being imposed upon either the fabric cover or upon the sealing ring. This feature assumes a special significance when applied in combination with my frictional type of binder ring in that said reenforcing plate prevents said ring from being dislodged under heavy seat load.

My pad is firmly held in place by the use of but a single endless binding means which constitutes the sole fabric securement and requires no supplementary crimping or like deformation relative to the embraced crown plate flange. This simple expedient not only facilitates production work but allows the assembly to be rapidly and effectively carried out in a single operation by the use of a power-driven assembly press. Furthermore, by the use of a surrounding panel framework adapted to mount the aforesaid upholstered pad, the fabric need not extend out to the marginal edge of the frame, instead the pad binder ring for at least a portion of its length, is purposely kept inwardly spaced from said marginal edge, to the end that the panel trim effect may be heightened. Such disposition allows of effectively contrasting the color scheme between said cover fabric and its circumscribing panel face.

My improved panel mounting also obviates the soiling or wearing through of the fabric border and there is further produced a decided saving in upholstery material as compared to fastening devices requiring the fabric to be carried out to the panel perimeter; as a consequence, it becomes possible to utilize the finer high-grade and more expensive upholstery fabrics without unduly raising the fabrication cost of the finished panel product.

Reference is had to the annexed two sheets of drawings which are illustrative of certain specific embodiments of my invention, like characters of reference indicate like parts, and in which drawings:

Fig. 1 is a side elevation of a folding chair assembly equipt with my improvements as set up into open position and indicating in partial dotted outline, the preferred pivoted mode by which my upholstered back member may be collapsed upon its seat.

Fig. 2 represents a front view of the opened chair shown in Fig. 1 and Fig. 3 shows a top view thereof.

Fig. 4 illustrates in plan, a preferred style of sealing ring used to secure the upholstery to my metal seat or back members, and Fig. 5 is an end view of said strap-like band.

Fig. 6 shows in further detail, a top view of my upholstered metal seat that may be used in connection with Figs. 1 to 3, and Fig. 7 is a cross sectional view thereof as taken along line 7—7 of Fig. 6 to indicate one manner in which said sealing ring may be utilized to trim the margin of the upholstery cover fabric.

Fig. 8 represents an enlarged fragmental view of Fig. 7 and discloses the relationship of the component upholstery elements prior to forcing said ring into an endless seat groove, while Fig. 9 is illustrative of the aforesaid upholstery after said sealing ring has been secured in place.

Fig. 10 shows a preferred sectional style of seat structure in which the upholstered cushion pad has been separately formed and as a unit inserted into a suitable seat recess.

Fig. 11 shows an enlarged detail of Fig. 10 while Fig. 12 represents a cross-sectional view of said unitary seat panel as used in connection with Fig. 10.

Referring in detail to said drawings, my upholstered composite seat and back members may be applied to a chair of the reversibly folding type which in the instance shown, comprises a pair of spaced strap-like front legs A^1 and $A^{1'}$; this chair may also comprise a similar pair of rear legs designated as B^1 and $B^{1'}$, respectively pivoted at B^2 intermediate their ends to one of said front legs in accordance with usual practice. The upper extremities A^2 and $A^{2'}$ of said front legs may respectively extend beyond the complementary ends of the rear legs as shown, it being understood that the respective leg pairs are to be interconnected by rung means in the straddled manner indicated. In collapsed chair position, all of said leg members are intended to fall into substantial alignment in the conventional fashion.

Across the free upper ends of the rear legs B^1 and $B^{1'}$, complementary pivots such as C^1 may swivally carry the forward portion of the sheet-metal seat C. The inwardly offset upper front leg extremities A^2 and $A^{2'}$ may each likewise be provided with complementary pivots such as D^1 between which there may be swivally mounted the sheet metal back D that may be given a cross-sectional shape and contour similar to that of the seat C. The adjacent edges of said seat and back

are shown linked together by complementary hinge means such as D^2, which serves to guide said back into inverted collapsed position upon its seat member. By virtue of the present invention, either or both the metal seat frame C and back frame D may similarly be provided with an upholstered cushion pad designated in its entirety by E, and it will be observed that this cushioning pad is preferably given a rounded profile made to extend outwardly beyond the plane of the body contacting face to which it is applied. When said seat and back members are completely collapsed into alignment with said folded leg members, the more fragile cushioned seat and back faces may thus be made to lie upon each other and are given ample protection while the folded chair is being stacked for storage or otherwise handled.

The remaining structural chair details suitable for present purposes, have been more fully described in my co-pending application Serial No. 298,170 as filed Aug. 8, 1928. The instant disclosure is more largely concerned with perfecting said upholstered cushion means. To this end, Fig. 6 shows the annular top or body contacting seat face C^2 of my sheet metal frame as equipt with my improved upholstered cushion pad, it being apparent that by identical means such upholstery might likewise be applied to the forward or body contacting face of the foldable back member D, also to any kind of fixedly mounted furniture panels other than the foldable type of chair seat or back members herein more specifically described. The term "seat panel" as used in the claims is to be construed broadly as being inclusive of a back panel and likewise of any other similar furniture element such as might prove applicable to bedsteads, bureaus or the like.

As will be seen from Fig. 7, said annular sheet-metal top face C^2 preferably has the marginal edges thereof shaped up to provide for a depending circumscribing seat flange C^3 that imparts the desired stiffness to said top plate. Within the face confines of said flange there is further provided an impressed endless channel-like profile having complementary inner and outer side walls C^5 and $C^{5'}$ respectively, while the bottom thereof may be closed by the transversely disposed ledge wall C^{11} or the like. The innermost wall C^5 preferably is given an essentially rabbet-like shape with its depth kept somewhat shorter than its mate and the uppermost edge of the wall C^5 being crimped to provide for a centering bead C^6 which in turn, may be spanned by a metal dished crown plate or equivalent backing element C^7 that is preferably kept slightly depressed relative to the level of the top face C^2, as shown. An outstanding attribute of said backing member lies in its being relatively non-stretchable longitudinally considered and in also being relatively rigid against transverse loading.

The particular plan contour given to said groove C^4 is immaterial; as applied to my sheet-metal seat frame, its shape may be made unsymmetrical in the fashion shown in Fig. 6, where a substantially straight length portion is provided adjacent to the swingable edge of this seat while toward the pivoted rear seat edge, said groove may be given a more rounded shape that recedes from the respective contiguous corners of the substantially square shape here given to the seat face. If desired, said rear seat corners may each be equipt with an outwardly projecting stop lug such as C^8 and this may be further attached to the seat flange C^3 by strap means such as C^9 that respectively terminate in a perforated hinge or link member D^2. Each of the rear corner regions may further be provided with depressions of triangular shape such as C^{10}, which feature is however non-essential except for decorative purposes.

The upholstered cushioning means E as applied to my metal seat or back, preferably comprises an endless retaining or binder ring E^1 which as detailed in Figs. 4 and 5, is preferably made from strap metal stock bent into loop shape that closely conforms to the shape and size given to the innermost groove face C^5 and is intended to be stretched somewhat when the band E^1 is forced in place. The ends of said ring may be fastened together in any suitable fashion but to facilitate ease and cheapness in fabrication, it is preferred to resort to the interlocking style of keeper joint $E^{1'}$ indicated in Fig. 5 but it will be obvious that such strap ends may also be otherwise joined together.

Said cushioning pad means may further comprise a sheet of pliant fabric cover such as tapestry cloth, leather, leatheroid, or the like suitable chair upholstery material designated as E^2. Underneath the assembled fabric and disposed on top of the metal panel plate C^7, is provided suitable cushioning material which may comprise a relatively thin layer of corrugated paper board or the like sheet filler medium E^3; superimposed thereon is a relatively thick layer of wadding E^4 preferably comprising felt or other soft fibrous cushioning material. The present invention is more largely concerned with improved means for securing the border region of the fabric E^2 which cover does not however necessarily have to be stuffed as described.

Both the filler medium E^3 and the cushioning material E^4 are intended to be first cut out of sheet stock to an approximate size or pattern somewhat smaller than the contour defined by the inner groove wall C^5 in the manner indicated by Fig. 8, where the component upholstery parts are shown partially assembled and centered upon the depressed

metal panel plate C^7 prior to their securement to said seat frame. The inside dimension of my sealing ring E^1 is preferably made of bore size that will snugly embrace the outermost dimension given to the groove wall C^5, hence when this ring is firmly pressed down into place with the margin of the fabric E^2 interposed in clamped relation therebetween in the fashion indicated in Fig. 11, the retaining band will be forcibly elongated somewhat while snugly drawing and stretching the fabric over the enclosed sheet wadding E^4, which in turn causes the edges of the cushioning medium to assume a curvilineal profile that imparts a neat rounded appearance to the finished upholstery as a whole. The projecting edge of the surplus fabric may thereupon be trimmed off adjacent to the lowermost free band edge; said binder ring is preferably made of a strap width approximately equal to the effective depth of the groove C^4 so that the uppermost exposed ring edge may fall substantially flush with the beaded perimeter of the upholstered panel plate C^7. It will be obvious that the described ring securement is intended to be such as will frictionally maintain the fabric in a proper stretched relation across that portion of the body contact facing that is circumscribed by said frame groove. In the present invention, the binding of the fabric border is primarily accomplished by radial pressure exerted inwardly against the groove face C^5 while the external band surface is kept freely spaced in relation to the circumscribing groove wall $C^{5'}$ in the gap-wise fashion shown in Fig. 11.

Referring now to the preferred style of sectional upholstered seat panel illustrated in Figs. 10 to 12 inclusive, this comprises an equivalent groove designated as $C^{4'}$; one side wall thereof namely the outer groove wall $C^{5'}$, is here carried in an annular sheet-metal frame part substantially similar to that previously described and likewise provides for a circumscribing seat flange C^3 with an annular top seat face C^2 therefor from which the aforesaid interior plate element C^7 may or may not be pierced to provide for a step-like ledge or bottom wall $C^{11'}$. Seated upon this overhanging ledge is a unitary insertable cushion pad E^5 comprising the dished metal crown plate or similar relatively rigid backing means $C^{7'}$ together with a normally disposed inner side wall or rabbet-like abutment C^5, which latter may in the present instance be provided with an out-turned peripheral flange adapted to rest upon said ledge $C^{11'}$. The inner side wall as associated with said built-up panel, may further be equipt with a plurality of fastenings E^6 of the prong type adapted to project through registering holes in said wall $C^{11'}$ and crimped thereover in the manner indicated by Fig. 10. As will be apparent, the seat may likewise be held into the circumscribing frame socket by other suitable fastening means such as staples, rivets or the like.

My upholstered pad may be separately assembled by forcing the binder ring in place around the inner groove face c^5 as represented in Fig. 12, whereupon it may be bodily set upon the recessed frame ledge $C^{11'}$ and clinched into place as described. It will however be obvious that the structural principle underlying my mode of upholstery is applicable to any metal seat or back frame members and also other furniture panels that provide for a suitable groove formation. In this sectional unitary panel, the depressed crown plate and its beaded perimeter again serve to center the wadding while the upholstering process is being completed. It will further be observed that the relation of band strap thickness to the groove width is preferably such as not to totally fill the groove in the conventional manner; instead the present disposition purposely provides for a clearance gap around the band exterior so that my upholstered pad may be freely inserted within the outer groove face $C^{5'}$.

By the use of the described instrumentalities, the metal seat and back frame members of my chair may first be japan finished in any desired color, whereupon a harmonized shade upholstery fabric may be applied thereto, all of which results in producing a pleasing and attractive chair product. The non-metallic cushioning medium when attached to my metal frame further removes the disagreeable cold seat feel to which a user of an all metal chair might otherwise be subjected. In addition, my sheet metal seat member by virtue of the described groove and flange reenforcements is made relatively stiff and amply rigid to resist undue distortion under normal body loads, and the mode of initially stretching and securing the upholstery thereon is such as will during extended use, obviate loosening or sagging on part of the fabric. This result is herein obtained in a simple and expeditious manner without need of nails, cement or other extraneous band or fabric securement of any kind.

Although certain specific embodiments and shapes of metal chair members have herein been set forth, I do not wish to be limited to the cited arrangement or form of chair parts, since various changes may be resorted to such as carrying the ledge wall $C^{11'}$ entirely across the open center region that is shown pierced in Figs. 10 and 11, all without departing from the spirit and scope of my invention, heretofore described and more specifically pointed out in the appended claims.

Claims:

1. A chair panel comprising a relatively non-stretchable backing plate, the upper surface of which has a groove that is inset from at least one panel side, covering-material

superimposed on said plate, and an endless band passing through said groove and engaging the edges of said covering-material to hold the latter in place solely by frictional engagement.

2. An upholstered panel for furniture comprising a substantially rigid and non-extensible backing, a pliant upholstery material superimposed to cover said backing in cooperative reenforced relation, padding means interposed between the cover and said backing, and an endless binding hoop circumscribing the backing and serving to stretch the covering-material over said padding, a part of said circumscribing hoop being sunk in the upper surface of the panel and located inwardly from the perimeter of the panel.

3. A sheet-metal panel for furniture comprising a substantially rigid backing plate having an outstanding marginal flange, upholstery material covering said plate in cooperative reenforced relation, and a stretchable endless metal band embracing said flange and binding the border region of the upholstery material thereto, said band being located wholly inwardly from the panel perimeter.

4. An upholstered seat panel comprising an exposed annular body-contacting face together with a transversely rigid and longitudinally non-stretchable backing means spanning said annular face and the marginal region of which backing is encompassed by an endless depression, cushioned upholstery material covering said backing in cooperative reenforced relation, and a hoop entered into said depression to initially stretch the upholstery material over the marginal region of said backing and to bind said stretched material thereto, said backing serving to support said cushioned material and to relax the hoop tensioning pull when the seat panel becomes loaded.

5. A ring-shaped seat panel having a body contacting face, and an attachable pad which comprises a relatively rigid backing, an upholstered fabric superimposed to cover said backing in cooperative reenforced relation, together with a single endless metal hoop continuously binding the border of the cover fabric around the perimeter of said backing, said pad being disposed to substantially fill the central region circumscribed by the ring-shaped panel.

6. A furniture panel comprising a pad structure including a sheet-metal backing plate, a marginal depending flange for said plate and also an intermediate rim-like bead of rounded profile that is kept raised with respect to one side face of said plate, an upholstery fabric disposed to cover said one plate side, an interposed cushioning medium centered within said bead, and a stretchable hoop-like retaining means interiorly sized to clampingly embrace said flange and bind the fabric border region therebetween, said retaining means being located inwardly from the panel perimeter.

7. In a chair panel of the sectional type, a framework having an annular body-contacting face of which the inner contour is provided with a laterally disposed groove wall element, an insertable upholstered pad spanningly associated with said wall, said pad comprising a sheet-metal backing plate having a circumscribing complementary groove wall element that is kept inwardly spaced from the first named wall element, an upholstery material covering said plate, and a stretchable hoop of strap-like profile entered edgewise between said walls, the interior surface dimension of said hoop being sized to clampingly embrace said complementary wall and tightly bind the border of said material therebetween.

In testimony whereof, I have herewith set my hand this 24th day of August, 1928.

BRUCE M. STANNARD.