Jan. 9, 1940. A. LORENZ 2,186,705

ELASTIC SUPPORT FOR PIECES OF FURNITURE

Filed Oct. 29, 1936 2 Sheets-Sheet 1

Fig.1

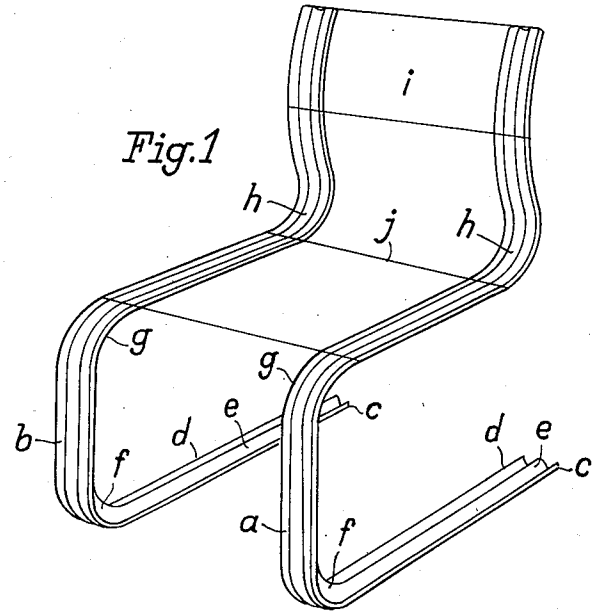
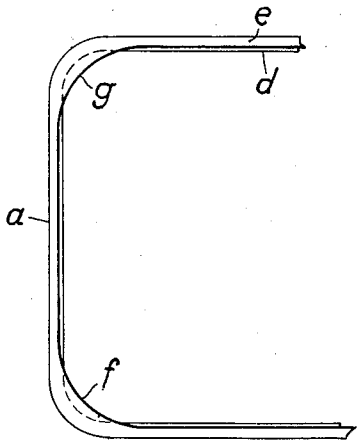


Fig.2



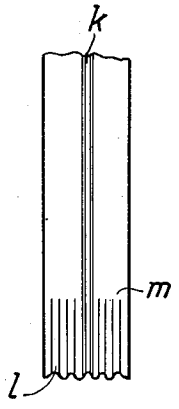


Fig.3

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ELASTIC SUPPORT FOR PIECES OF FURNITURE

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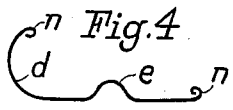

Fig.4

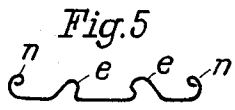

Fig.5

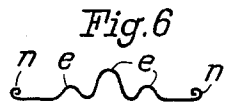

Fig.6

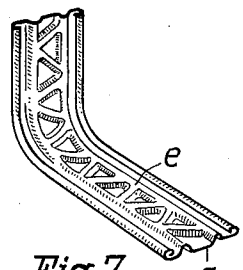

Fig.7

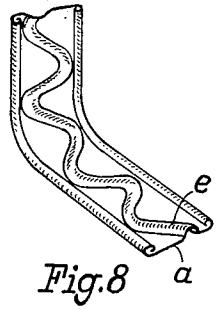

Fig.8

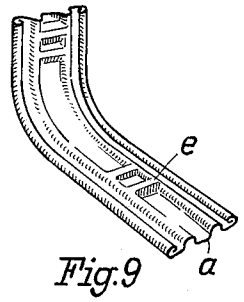

Fig.9

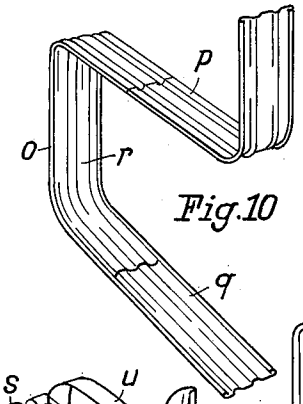

Fig.10

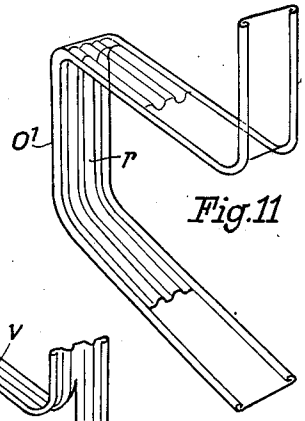

Fig.11

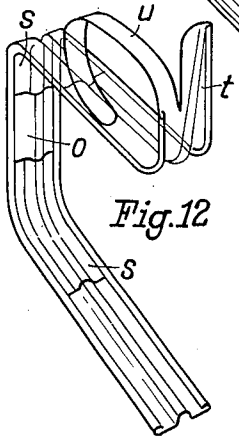

Fig.12

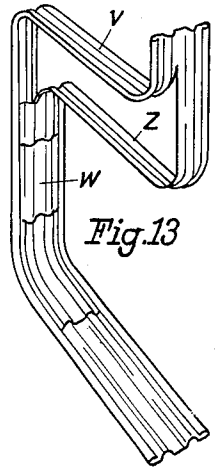

Fig.13

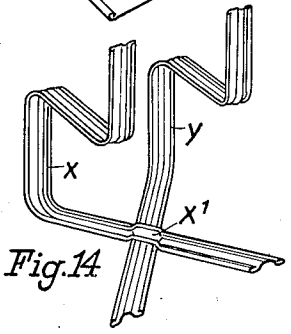

Fig.14

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ELASTIC SUPPORT FOR PIECES OF FURNITURE

Anton Lorenz, Berlin, Germany

Application October 29, 1936, Serial No. 108,200
In Germany November 1, 1935

9 Claims. (Cl. 155—50)

The invention relates to such pieces of furniture where U-shaped parts form the elastic supports for the reception of the seat-load. Steel tubes or stout metal bands have been chosen as material for the supports in furniture of this kind according to prior art. These, however, are expensive in the manufacture and unnecessarily heavy.

The object of the invention is a support which is easily manufactured and slight of weight, possessing the requisite resisting power, while being elastic to the desired degree at the same time.

A further object of the invention consists in thus arranging reinforcing grooves at certain points that there results a preferred elastic yielding in certain directions as compared with other directions.

The invention is described more in detail in connection with the accompanying drawings, which show different embodiments by way of example and details of the invention, in particular:

Fig. 1, a perspective view of a chair with the supports according to the invention,

Fig. 2, a portion of a support in longitudinal section,

Fig. 3, a modified embodiment of a support in front view,

Figs. 4, 5 and 6, various cross sections of the supports in diagrammatic delineation,

Figs. 7, 8 and 9, various embodiments of portions of the supports in perspective delineation,

Figs. 10 and 11, supports with inserted reinforcing parts in perspective delineation,

Figs. 12 and 13, supports with arm-rest formed of the same piece,

Fig. 14, an arrangement of intersecting supports.

The support of the chair according to Fig. 1 comprises two side portions *a* and *b* which consist of a continuous substantially flat strip of a thin material, especially sheet metal. Each side portion has a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base. The edges *c* and *d* of the strip of sheet material are bent upwardly or beaded and a central groove *e* is pressed into the sheet metal, so that the latter has a corrugated cross-section. At the corners of the U-shaped support at *f*, *g* and *h*, the groove *e* has been cut deeper, as can be seen from Fig. 2, in order to stiffen the support particularly well at this point. The side portions *a* and *b* carry the seat *j* and the back *i*. The seat and the back are elastic like the known steel chairs; the corners *f*, *g* and *h*, however, are safe-guarded against over-straining and against exceeding the limit of elasticity by means of the deeply pressed in groove *e*. By varying the depth of the groove *e* the elasticity of the back *i* can be large, independent of that of the seat *j*, by the groove *e* being pressed in less deeply at the point *h* than at the points *f* or *g*.

Fig. 3 shows a somewhat modified embodiment of the support. Apart from a groove *k*, extending over the whole length of the support, there are provided shallower and shorter grooves *l* at the lower corner *f*. The depth of the grooves decreases with the distance from the corner *f* and they disappear entirely at point *m*.

In the cross-sections of the support according to Fig. 4 a reinforcement is provided—apart from the groove *e*—by bending up the edges at point *n*.

The beaded edge *d* causes a further stiffening of the support in lateral direction. The profile of Fig. 5 shows two grooves *e*, while the profile of Fig. 6 shows a deep central groove and two less deep parallel adjacent grooves *e*.

The support according to Fig. 7 shows diagonally transversal grooves *e*, while in Fig. 8 the grooves are arranged in a serpentine line. In the embodiment of Fig. 9 longitudinal grooves are arranged in conjunction with transversal grooves.

The support shown in Fig. 10 is provided, from about the middle of the seat at *p* to the middle of the lower support base at *q*, with an inserted reinforcing strip or band *r* which in its shape conforms to the profile of the support *o* and thus makes the support double-walled in the vertical portion. In Fig. 11 only the inserted strip *r* is reinforced by longitudinal grooves, whereas the post *o'*, being smooth otherwise, has bent up edges.

The side support *o* of Fig. 12 has single inserted reinforcements *s* at the corners. The back portion *t* is split up and the outer half has been bent round towards the front in order to form an arm-rest *u*.

Fig. 13 shows a side support *w* which has likewise inserted reinforcements and where the upper portion has been slit open longitudinally in the middle so that by bending up the slit parts the arm-rest *v*, stiffened by grooves, and the equally stiffened seat bearer *z* are formed.

Fig. 14 shows two side supports *x* and *y* whose lower base parts are crossed at point x^1. Hereby a lateral stability is attained without needing special cross-bars connecting the supports *x* and *y*. As will be readily apparent, in all embodi-

ments of the support shown in the drawings the crest of the reinforcing corrugations provided in the strip of sheet material substantially extends in longitudinal direction of the strip. The execution of the thin metal supports can be varied in different manners. It is essential that the metal sheets forming the support or the inserted reinforcing sheets are provided with projections which augment the moment or capability of resistance against bending stresses.

It is understood that the term "seat member" used in the claims designates a seat with or without a back-rest connected thereto.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare, that what I claim is:

1. An article of furniture comprising a support, a seat member carried by said support, said support including two side portions, one on each side of the chair, each side portion having a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base, each of said side portions being formed of a continuous substantially flat strip of sheet material, and reinforcing corrugations provided in the material of each strip, said corrugations extending through said turns and throughout substantially the length of the leg and the arms, and the crest of said corrugations substantially extending in longitudinal direction of the strip.

2. An article of furniture comprising a support, a seat member carried by said support, said support including two side portions, one on each side of the chair, each side portion having a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base, each of said side portions being formed of a continuous substantially flat strip of sheet material, and reinforcing corrugations provided in the material of each strip, said corrugations extending through said turns and throughout substantially the length of the leg and the arms, the crest of said corrugations substantially extending in longitudinal direction of the strip, and the indentations of said corrugations being deeper at said turns than at the leg and arms.

3. An article of furniture comprising a support, a seat member carried by said support, said support including two side portions, one on each side of the chair, each side portion having a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base, each of said side portions being formed of a continuous substantially flat strip of sheet material, and a plurality of reinforcing corrugations provided in a material of each strip, said corrugations extending through said turns and throughout substantially the length of the leg and the arms, the crest of said corrugations substantially extending in longitudinal direction of the strip, and the number of corrugations arranged at the turns being larger than the number of corrugations arranged on the leg and arms.

4. An article of furniture comprising a support, a seat member carried by said support, said support including two side portions, one on each side of the chair, each side portion having a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base, each of said side portions being formed of a continuous substantially flat strip of sheet material, and reinforcing corrugations provided in the material of each strip, said corrugations extending through said turns and throughout substantially the length of the leg and the arms, the crest of said corrugations substantially extending in longitudinal direction of the strip, and said corrugations including beaded edges of said strip.

5. An article of furniture comprising a support, a seat member carried by said support, said support including two side portions, one on each side of the chair, each side portion having a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base, each of said side portions being formed of a continuous substantially flat strip of sheet material, reinforcing corrugations provided in the material of each strip, said corrugations extending through said turns and throughout substantially the length of the leg and the arms, the crest of said corrugations substantially extending in longitudinal direction of the strip, said corrugations including beaded edges of said strip and reinforced bands of sheet material associated with each strip, said bands extending through said turns and throughout substantially the length of the leg and the arms and being attached to the strip by said beaded edges.

6. An article of furniture comprising a support, a seat member carried by said support, said support including two side portions, one on each side of the chair, each side portion having a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base, each of said side portions being formed of a continuous substantially flat strip of sheet material, reinforcing corrugations provided in the material of each strip, said corrugations extending through said turns and throughout substantially the length of the leg and the arms, the crest of said corrugations substantially extending in longitudinal direction of the strip, said corrugations including beaded edges of said strip, and reinforcing bands of sheet material associated with each strip, said bands extending through said turns and throughout substantially the length of the leg and the arms and being attached to the strip by said beaded edges, and additional corrugations provided in the material of the bands, said additional corrugations extending throughout substantially the length of said bands, and the crest of said additional corrugations substantially extending in longitudinal direction of the bands.

7. An article of furniture comprising a support, a seat, a back-rest, said seat and said back-rest being carried by said support, said support including two side portions, one on each side of the chair, each side portion having a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base, each of said side portions being formed of a continuous substantially flat strip of sheet material, and reinforcing corrugations provided in the material of each strip, said corrugations extending through said turns and throughout substantially the length of the leg and the arms, and the crest of said corrugations substantially extending in longitudinal direction of the strip.

8. An article of furniture comprising a support, a seat, a back-rest, said seat and said back-rest being carried by said support, said support in-

cluding two side portions, one on each side of the chair, each side portion having a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base, each of said side portions being formed of a continuous substantially flat strip of sheet material, reinforcing corrugations provided in the material of each strip, said corrugations extending through said turns and throughout substantially the length of the leg and the arms, the crest of said corrugations substantially extending in longitudinal direction of the strip, said corrugations including beaded edges of said strip, and reinforcing bands of sheet material associated with each strip, said bands extending through said turns and throughout substantially the length of the leg and the arms and being attached to the strip by said beaded edges.

9. An article of furniture comprising a support, a seat, a back-rest, said seat and said back-rest being carried by said support, said support including two side portions, one on each side of the chair, each side portion having a front leg merging at its upper and lower ends by turns into rearwardly extending arms, the lower arm forming a ground-engaging base, each of said side portions being formed of a continuous substantially flat strip of sheet material, reinforcing corrugations provided in the material of each strip, said corrugations extending through said turns and throughout substantially the length of the leg and the arms, the crest of said corrugations substantially extending in longitudinal direction of the strip, said corrugations including beaded edges of said strip, and reinforcing bands of sheet material associated with each strip, said bands extending through said turns and throughout substantially the length of the leg and the arms and being attached to the strip by said beaded edges, and addition corrugations provided in the material of the bands, said additional corrugations extending throughout substantially the length of said bands, and the crest of said additional corrugations substantially extending in longitudinal direction of the bands.

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