June 9, 1953 G. INGRAM, JR., ET AL 2,641,311

METAL FRAME FOR UPHOLSTERED FURNITURE

Filed Sept. 1, 1949 4 Sheets-Sheet 1

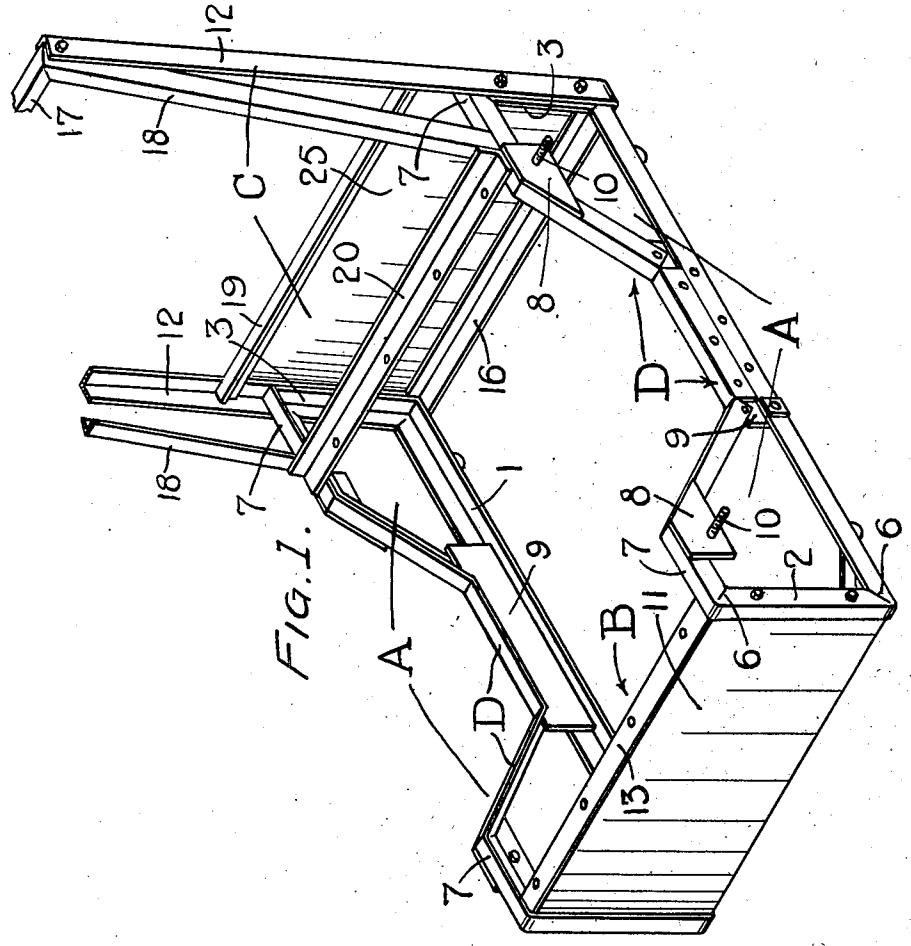


FIG. 1.

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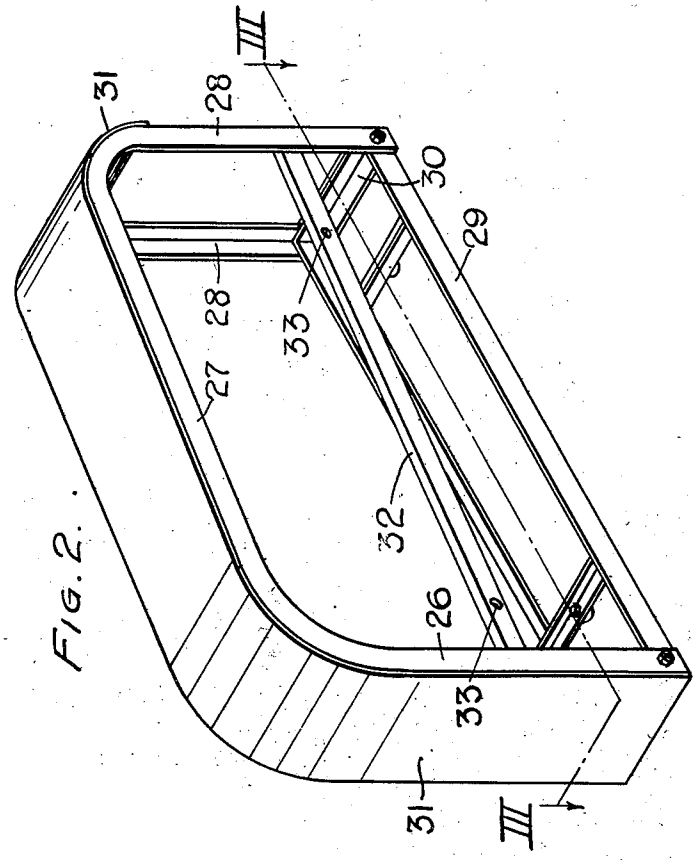


FIG. 2.

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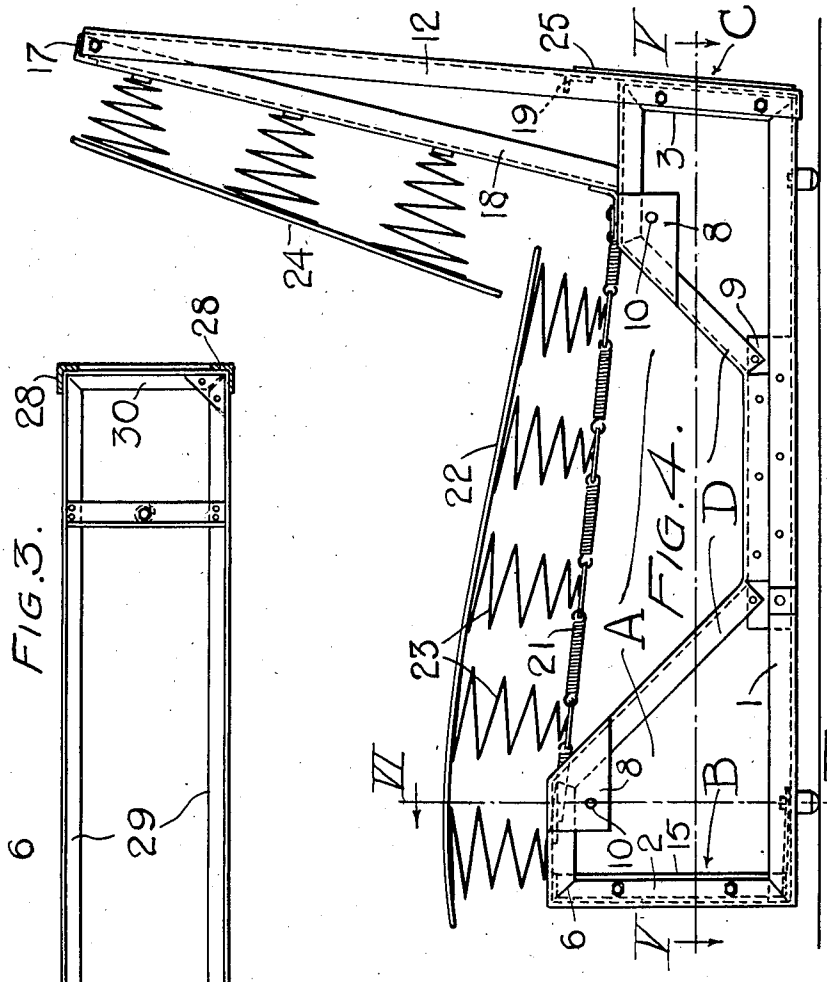


FIG. 3.

FIG. 7.

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METAL FRAME FOR UPHOLSTERED FURNITURE

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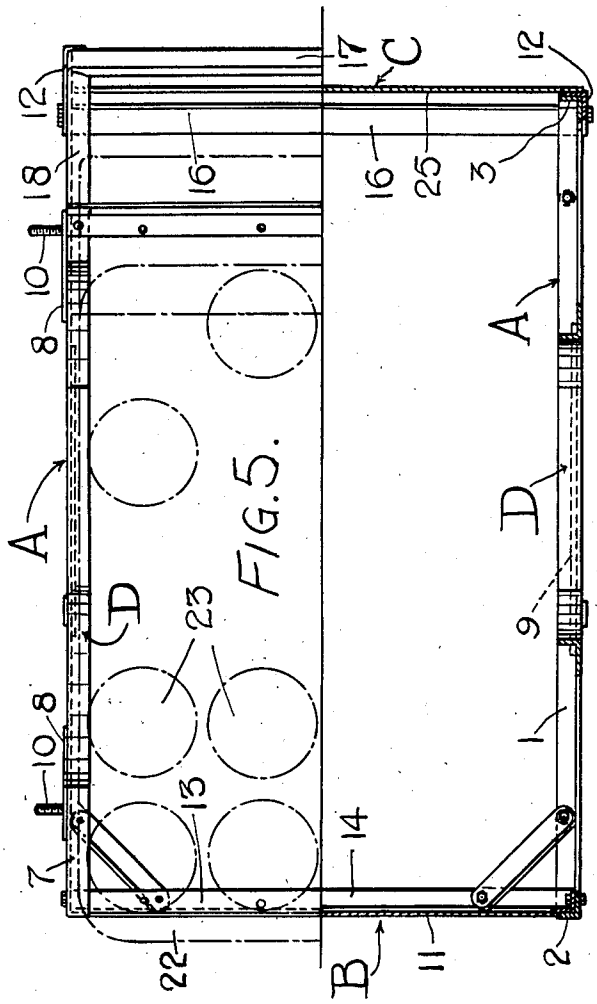


FIG. 5.

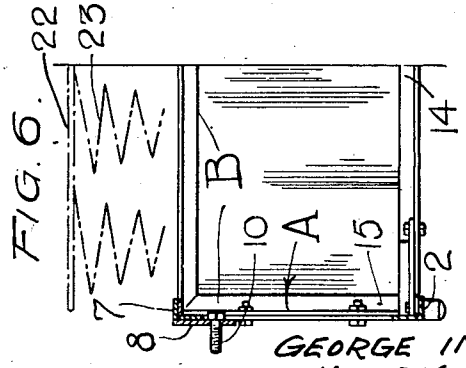


FIG. 6.

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METAL FRAME FOR UPHOLSTERED FURNITURE

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Application September 1, 1949, Serial No. 113,612
In Great Britain April 6, 1949

4 Claims. (Cl. 155—130)

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This invention relates to upholstered chairs, settees and the like constructed from metal framework upon which the upholstery and springs are to be carried and of the type in which the metal framework is made up of separately constructed skeleton units attached together to constitute the complete skeleton framework of the chair or settee. In this type of furniture two forms of skeleton unit are employed, viz: an end unit including the whole side of the piece of furniture complete with arm rest, and a seat unit which combines the actual seat and the backrest. In constructing a chair, a pair of end units are fitted to an intermediate seat unit, and for a settee, two or more seat units are fixed together with an end unit at each end, although a single longer seat unit may alternatively be used.

The object of the present invention is to make a very sturdy yet lightweight article of the foregoing type from skeleton metal units, and one moreover in which the seat unit is a rigidly braced box-like member yet without side framework interfering with the action of the spring unit mounted thereon.

According to the invention, an article of upholstered furniture of the type hereinbefore described includes a seat unit having a rectangular base frame with ends and sides upstanding therefrom, making a box-like form, the two sides thereof being each constructed with a depression or well to afford a clearance for the sides of the depressible spring frame mounted on the top of the unit. The upstanding end at the back of the unit is continued upwards to constitute the backrest. When the seat unit is assembled between the two end units, the aforesaid rectangular base frame preferably rests on the ground, with or without the interposition of stud-feet, casters or the like. The frame members, from which the skeleton units are constructed, are advantageously L-section metal angle bars.

In order that the invention may be readily understood an embodiment thereof will be described by way of example with the aid of the accompanying drawings, wherein:

Figure 1 is a perspective view of the rigid skeleton framework constituting a seat unit (one upper corner at the back having been broken away to illustrate more clearly the section of various angle members);

Figure 2 is a perspective view of a skeleton end unit, i. e. one of the ends adapted to be fixed respectively to the sides of the seat unit of Figure 1;

Figure 3 is a sectional plan view of an end unit, taken on the plane III—III in Figure 2;

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Figure 4 is a side elevation of the seat unit seen in Figure 1 with the seat and back spring frames in position;

Figure 5 is a plan view of Figure 4 with the lower half in section taken on the line V—V of Figure 4;

Figure 6 is a transverse sectional view on the line VI—VI of Figure 4 (one half only being shown for convenience); and

Figure 7 is a perspective view to a larger scale, of a fragment of the corner of framework seen in the upper left of Figure 4, and referred to later.

With reference to the illustrated embodiment, an article of furniture according to the invention would comprise a pair of end units as seen in Figures 2 and 3, and one or more seat units (depending on whether a chair or settee is to be built) as seen in Figures 1, 4 and 6. The units are fastened together and suitably upholstered.

Taking the seat unit first; this comprises as seen in Figures 1, 4, 5, and 6 (and particularly Figure 1) a pair of sides generally indicated as A made up from a rigid assembly of base bar 1 with upstanding bars 2 and 3 at front and back respectively, and upper "platform" parts described later, this pair of sides A being joined together to make a box-like conformation by front and back frames B and C respectively. Each side is made from L-section bar with flanges 4 and 5 (see Figure 7) mainly from a single length bent to form an elongated side to the rectangular base of the seat unit which is formed when the two spaced apart sides A are erected to form the box-like conformation previously described, composed of the two sides A, the front B and the back C. The base 1 of the sides A is continued by V-notching at 6 the outside flange 4 (Figure 7) and bending into the front and rear verticals 2 and 3, which then similarly continue by inward bending and V-notching one flange to form two short lengths 7 of the side of the upper "platform." This inward bending as seen at the top of the upright 2 forms a substantially right-angular corner which is the fragment shown enlarged in Figure 7. The space between the short lengths 7 which interrupts the "platform" or top of the sides A forms the opening to a depression or well, and a truncated V-shape bracing frame D joins the ends of the two short lengths 7 to the elongated side 1 forming part of the rectangular base of the seat unit. The bracing frame is itself a single continuous bent length of L-section bar, joined at its top to the "platform" lengths 7, 7 by suitable strong gusset plates 8, and to the

elongated side 1 of the rectangular base of the unit by a lap plate 9. The top gusset plates constitute strong members to receive bolts 10 for securing thereto either another seat unit as in Figure 1 or a chair or settee end unit as in Figure 2.

To connect together these sides A of the seat unit (Figure 1), a single length of similar L-section angle bar (such as shown in Figure 7) is V-notched along one flange and bent into a rectangular shape to form the front frame B and at each side this is snugly housed within and attached to the angles between the flanges 4 and 5 (Figure 7) of the L-bars of the spaced apart sides A. The said front frame B comprises upper and lower horizontals 13 and 14 respectively and verticals 15, and constitutes the front of the box-like seat unit, and it may be covered by a metal panel 11.

At the back the sides A are connected together by an upstanding backrest frame C in the form of a continuous length of L-section metal bar notched and bent into flat-bottomed U form having a cross bar 16 and sides 12, and into the sides 12 of this backrest frame C the two sides A of the seat unit are fitted and connected, the legs of the U (i. e. the sides 12) continuing upwards a suitable distance according to the height of the backrest. A second U frame is fitted in an inverted manner with its base 17 spanning the tops of the upstanding legs 12 of the first mentioned U and its legs 18 extending downwardly and inclined forwardly, where at their respective ends, they are secured to the rear short platform lengths 7 of the respective sides A. The combination of cross bars 14 and 16 and the elongated bars 1 at each side constitute a rectangular base for the box-like seat unit.

A backrest bracing bar 19 (Figure 1) is fixed horizontally between the two upstanding legs 12 of the first mentioned U frame C approximately at the same level as the front cross bar 13 of the seat unit, i. e. at upper "platform" level, and a seat bracing bar 20 is secured across the platform frame at the rear of the side wells between the aforesaid forwardly propecting short lengths 7.

A seat spring unit is mounted on the platform frame, being slung between the front cross bar 13 thereof and the aforesaid seat bracing bar 20. As usual, this spring unit comprises a bottom assembly of parallel rows of tension springs 21 (which assembly is the part slung as described above) and an upper wire mesh panel 22 supported floatingly thereon by coiled compression springs 23. This wire mesh panel is surrounded by a flexible frame, and the sides of said frame lie more or less directly over the sides 7 of the aforesaid platform frame of the seat unit, and thus when pressed down by the weight of an occupant of the chair or settee, the wells formed by the frames D of the sides A previously described allow unimpeded movement.

A backrest spring unit 24 is mounted on the backrest frame described.

The space between the backrest spacing bar 19 and base frame member 16 may be filled in by a sheet metal panel 25 as described in connection with the front of the seat unit.

With regard to the end units as seen in Figures 2 and 3, these are similarly constructed of angle section metal bars, and in general comprise two open-sided frames 26, 27, 28 and 29 which are of approximate rectangular shape joined together by spacing members. The said rectangular frames stand vertically and the top members 27 of each is inclined downwardly and backwardly from the horizontal. These two similar vertical frames which constitute each end unit may be spaced apart by distance pieces or as illustrated by an elongated one-piece bent rectangular frame at the base, in which case the long sides of the base frame are also the elements 29 of the vertical frames, and the short sides are the cross elements 30. The rectangular base frame fits snugly within the angles 25 and 28 of the vertical side frames. The two spaced apart vertical sides 26, 27, 28 are connected together, as well, by a panel of sheet metal 31 extending a suitable distance along the top and sides of the space between the two vertical side frames. One of the side frames of the end unit is adapted to be attached to the side of a seat unit as hereinbefore described. For this purpose one side of the end unit which is to be attached is provided with an attachment bar 32 running from the front upright 26 to the back upright 28 and said bar 32 is provided with holes 33 through which the attachment bolt 10 shown in position in the aforesaid gusset plate 8 (Figure 1) can be passed. The end units are right and left handed, one of each pair having the attachment bar 32 on one side, and one on the other. The attachment of the various seat and end units together need not necessarily be permanent; on the contrary the use of the attachment bolts 10 in the manner described renders the complete article of furniture capable of ready dismantling for such purposes as storage, transit, conversion of a chair into a settee, or lengthening of a "two-seat" settee.

We claim:

1. The combination in an article of furniture of separately constructed skeleton metal framework units including a seat unit comprising two side frames each composed of a length of L-section metal angle bar forming a base bar, front and rear vertical members, two inwardly extending platform parts and a truncated V-shaped bracing part therebetween forming a well, the base of which is secured to said bar, and also comprising a front frame composed of a continuous length of L-section metal angle bar bent into a rectangular shape by slitting one flange of said bar at each bend, said front frame being secured in the angles of said front vertical members of said side frames, a depressible spring frame mounted on said seat unit with the sides thereof disposed for unimpeded movement above the wells of said side frames, and a backrest frame including a continuous length of L-section metal bar bent into U-shape with the base thereof extending between the said side frames, of which said rear vertical members are secured in the angles of the upstanding limbs of said U-shaped back-rest frame, and also including a second U-shaped frame inverted with respect to said first-mentioned U-shaped frame with the base of said second U-shaped frame spanning the tops of the upstanding legs of said first U-frame and with the legs of said second U-frame extended downwards and inclined forwards to meet and be united with the inwardly directed platform parts at the rear of said side frames.

2. An article of furniture according to claim 1, including a bracing bar extending between and secured to the inwardly directed platform parts at the rear of said side frames, said depressible spring being slung between said bracing bar and

an upper horizontal bar forming part of said front frame.

3. The combination in an article of furniture of separately constructed skeleton metal framework units including a seat unit comprising two side frames each composed of a length of L-section metal angle bar forming a base bar, front and rear vertical members, two inwardly extending platform parts and a truncated V-shaped bracing part therebetween forming a well, the base of which is secured to said bar, and also comprising a front frame composed of a continuous length of L-section metal angle bar bent into a rectangular shape by slitting one flange of said bar at each bend, said front frame being secured in the angles of said front vertical members of said side frames, a depressible spring frame mounted on said seat unit with the sides thereof disposed for unimpeded movement above the wells of said side frames, and a backrest frame including a continuous length of L-section metal bar bent into U-shape with the base thereof extending between the said side frames, of which said rear vertical members are secured in the angles of the upstanding limbs of said U-shaped backrest frame, a second U-shaped frame inverted with respect to said first-mentioned U-shaped frame with the base of said second U-shaped frame spanning the tops of the upstanding legs of said first U-frame and with the legs of said second U-frame extended downwards and inclined forwards to meet and be united with the inwardly directed platform parts at the rear of said side frames, and also including an end unit attached to each side of the seat unit, each end unit comprising two spaced apart open-sided vertical frames of L-section metal angle bar of approximate rectangular shape, and a base connecting said frames together and comprising a one-piece bent rectangular frame of L-section metal angle bar fitted into the angles of said vertical frames.

4. A settee constructed from four skeleton metal framework units comprising a pair of seat units attached together side by side and each comprising two side frames each composed of a length of L-section metal angle bar forming a base bar, front and rear vertical members, two

inwardly extending platform parts and a truncated V-shaped bracing part therebetween forming a well, the base of which is secured to said bar, and also comprising a front frame composed of a length of L-section metal angle bar bent into a rectangular shape by slitting one flange of said bar at each bend, said front frame being secured in the angles of said front vertical members of said side frames, a depressible spring frame mounted on said seat unit with the sides thereof disposed for unimpeded movement above the wells of said side frames, and a backrest frame including a continuous length of L-section metal bar bent into U-shape with the base thereof extending between the said side frames, of which said rear vertical members are secured in the angles of the upstanding limbs of said U-shaped backrest frame, and also including a second U-shaped frame inverted with respect to said first-mentioned U-shaped frame with the base of said second U-shaped frame spanning the tops of the upstanding legs of said first U-frame and with the legs of said second U-frame extended downwards and inclined forwards to meet and be united with the inwardly directed platform parts at the rear of said side frames, and the others of said units being end units attached to the sides of the joined-together pair of seat units, and each comprising two spaced apart open-sided vertical frames of L-section metal angle bar of approximate rectangular shape, and a base connecting said frames together and comprising a one-piece bent rectangular frame of L-section metal angle bar fitted into the angles of said vertical frames.

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