June 23, 1953 R. C. BATEMAN ET AL 2,642,928

UPHOLSTERED SPRING CONSTRUCTION FOR FURNITURE

Filed May 18, 1946 3 Sheets-Sheet 1

Fig. 1

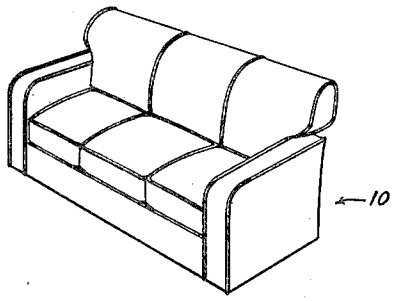
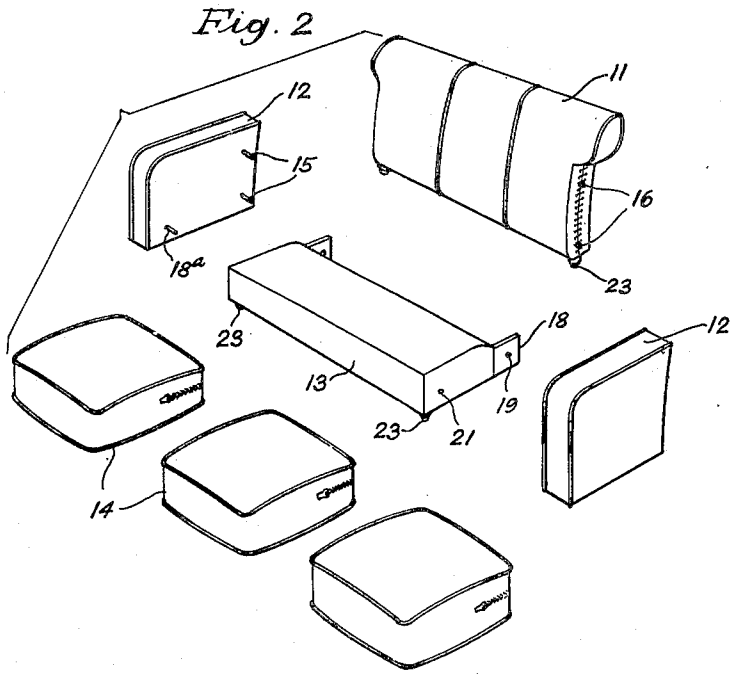


Fig. 2



Ralph C. Bateman &
Benjamin J. Schnitzer
INVENTORS

BY A. A. Oldham
ATTORNEY

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UPHOLSTERED SPRING CONSTRUCTION FOR FURNITURE

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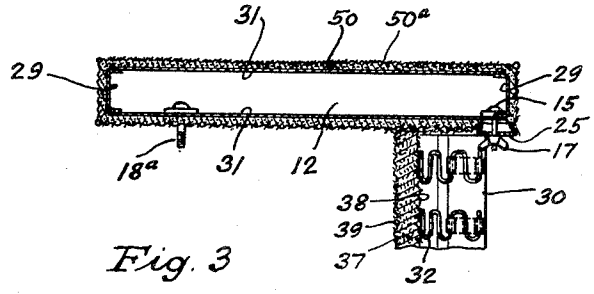

Fig. 3

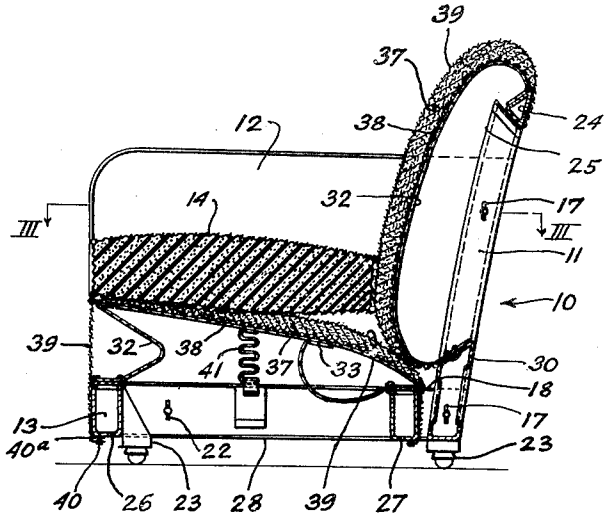

Fig. 4

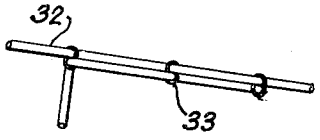

Fig. 5

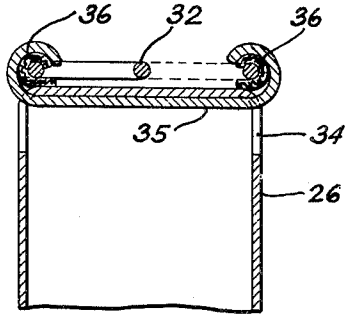

Fig. 6

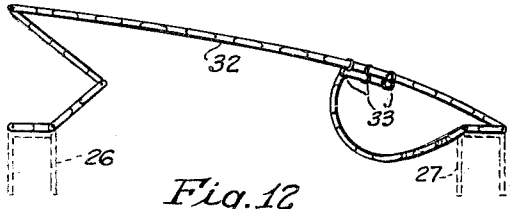

Fig. 12

Inventors
Ralph C. Bateman &
Benjamin J. Schnitzer

By

Attorney

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UPHOLSTERED SPRING CONSTRUCTION FOR FURNITURE

Filed May 18, 1946 3 Sheets-Sheet 3

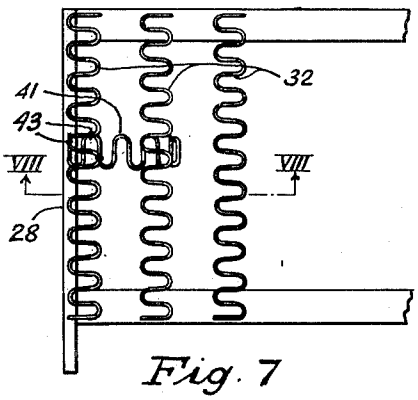

Fig. 7

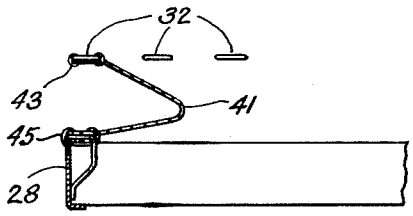

Fig. 8

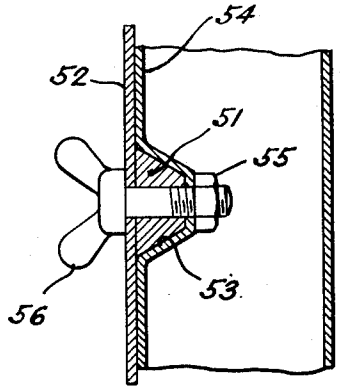

Fig. 9

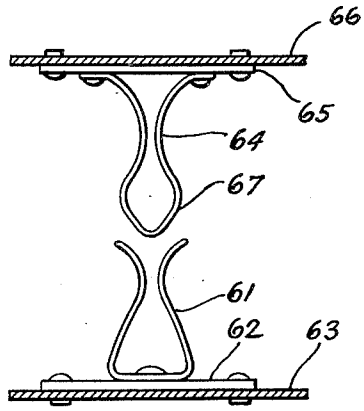

Fig. 10

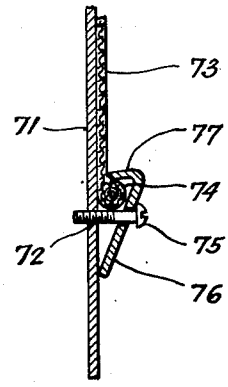

Fig. 11

Ralph C. Bateman &
Benjamin J. Schnitzer
INVENTORS

BY

ATTORNEY

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UPHOLSTERED SPRING CONSTRUCTION FOR FURNITURE

Ralph C. Bateman and Benjamin J. Schnitzer, Akron, Ohio, assignors to Goodyear Aircraft Corporation, Akron, Ohio, a corporation of Delaware

Application May 18, 1946, Serial No. 670,738

4 Claims. (Cl. 155—179)

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This invention relates to furniture, especially to furniture made from a plurality of sections that are removably secured together and that have light weight metal frames.

While the process of manufacture of most articles has changed materially in the past several decades, as have the articles themselves, still some articles, particularly furniture, are being manufactured today as they were many years ago. Household furniture has long presented a problem to all housekeepers due to the difficulty in moving the heavy, cumbersome articles around for cleaning, or other purposes. Also, in moving furniture long distances, the freight charges for the bulky objects are often so large as to make shipment of the furniture to a new home site inexpedient. Then, too, a piece of furniture may be seen in a store and be desired but different style arms or back may be preferred, which styles are not available.

The general object of this invention is to avoid and overcome the foregoing and other objections to previous types of furniture and to provide light weight, attractive furniture composed of a plurality of sections which are removably secured together.

Another object of the invention is to use a novel type cushion material and support in furniture construction.

A further object of the invention is to use light weight sheet metal in furniture manufacture.

Another object of the invention is to secure a plurality of furniture sections together in a solid but quickly separable manner.

Another object of the invention is to anchor metal springs to a metal frame in a permanent manner which prevents metal to metal contact.

The foregoing, and other objects of the invention which will be realized as the description proceeds, are achieved by the provision of an aluminum sheet metal frame which is formed of a base, a back, and end sections, which sections are provided with means for securing them together securely and rigidly but in a quickly and easily detachable manner. Zig-zag springs are provided as the resilient supports for both the base and back sections and in the furniture base one end of each of the springs is brought back in under the load supporting portion of the seat to reenforce it, and special locking clips are provided to secure

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the springs to the metal frames, which clips may have fabric bushings therein to insulate the movable springs from their positioning means, while suitable cover and cushioning means are secured over the springs to complete the seat.

Attention now is directed to the accompanying drawings, wherein:

Fig. 1 is a perspective view of a davenport embodying the principles of our invention;

Fig. 2 is an exploded view of the sections of the davenport of Fig. 1;

Fig. 3 is a fragmentary section taken on line III—III of Fig. 4;

Fig. 4 is a vertical section through the center of the davenport of Fig. 1;

Fig. 5 is a fragmentary elevation of the means of anchoring one spring end to a bowed spring section;

Fig. 6 is an enlarged detail section taken through the spring securing means of the invention;

Fig. 7 is a fragmentary plan view showing the special support for the end springs of the davenport base;

Fig. 8 is a section taken on line VIII—VIII of Fig. 7;

Fig. 9 is a detailed vertical section taken through a modified type of means for securing sections of furniture together;

Fig. 10 is a fragmentary exploded plan view of a clip used to secure sections of furniture together;

Fig. 11 is a fragmentary section through one type of fabric securing means of the invention; and

Fig. 12 is in larger scale a side view of the seat spring by itself.

For illustrative purposes, the invention is shown as applied to a davenport, generally indicated at 10, and, specifically, it is shown as comprising a back section 11, end sections 12, a base section 13, and cushions 14. The end sections 12 carry inwardly extending threaded pins or bolts 15 the back pair of which is positioned for engagement with holes 16 in the frame of the back 11. Wing nuts 17 are engaged with the bolts 15 for securing the ends 12 to the back 11, which bolts also secure the base section to the assembly through rearwardly directed arms 18, having holes 19 therein, through which the lower bolt on

each side of the back of the davenport ends extends. Likewise holes 21 in the front portion of the base section 13 receive the forwardly positioned bolts 18a on the end sections so that the sections can be secured together by wing nuts 22. It will be realized that the abutting surfaces of the davenport sections are of complemental shape so that they are easily secured together tightly and form a rigid structure. Foot support members 23 may be provided on the base section 13 or back section 11, or both, as desired.

Fig. 4 brings out the detailed construction of the davenport 10 more clearly and a feature of the invention is the use of light weight sheet metal, such as aluminum, in forming the davenport frame. In the back section 11, a triangular top member 24 extends between and is suitably secured to channel shaped end members 25 which also are connected by a substantially box-type base support 30 at the bottom of the back section. Likewise, the frame of the base section 13 is made in the shape of an open center rectangle which includes suitably constructed box-like front and rear members 26 and 27, respectively, which are connected by channel shaped arms 28 secured thereto in a conventional manner, as by rivets. The supports 23 may be secured to the arms 28 which may extend rearwardly of the base section to form the arms 18 for anchoring the back of the base to the davenport. In the end sections 12, the frame may comprise front and rear channel members 29 that have the desired contoured upper surfaces and a sheet member 31 may be secured over such upper surfaces and extend down the end sections a desired distance, such as to a point below the upper surface of the cushions 14. A channel or other reenforcing member (not shown) may be secured between the channels 29 adjacent their lower ends to complete the frames of the end sections. To contribute to the lightness of the davenport 10, discs, or other shapes (not shown) are stamped out of the sheet metal used in forming the frame in as great an area thereof as possible without undesirably reducing the strength of the frame or impairing an outside surface thereof. The support 30, and members 26 and 27 are especially suited for such metal removal and in fact such apertures in the frame are desirable in that they permit ready access to the interior of such members to secure them in place, or possibly secure their components together, or to secure covering material thereto. If desired, additional reenforcing or supporting members may be associated with the davenport frame in any conventional manner.

In the spring means used in the invention, further weight is removed with relation to previous types of seat constructions and a desirable cushion support is provided by the use of a plurality of zig-zag spring wires 32 that are secured to and extend in parallel relation between the members 26 and 27 of the seat base, and between the top member 24 and base support 30 of the seat back. As shown in Fig. 4, the springs 32 extend rearwardly and upwardly from the front member 26, then are doubled back on themselves to extend upwardly and outwardly of the seat. This shape of the springs forms a good load receiving surface at the front of the base section. The springs 32 in the base, after being doubled back on themselves to extend to the front upper edge of the base, then are again doubled back to extend arcuately to the rear of the member 27 and are secured thereto, as explained hereinafter. In order to provide a better support, the springs 32 do not terminate at the member 27 but continue in a forward direction and their ends are secured to the arcuately extending center spring portions by clips 33, or other suitable means. Note that the spring ends extend substantially perpendicularly to the center spring portions adjacent the rear and in the primary load carrying section thereof.

Fig. 6 is a detail section through the spring anchoring means of the invention and it shows the front member 26 which has sections removed from it at both of the upper corners formed therein to form holes 34 through which a metal bar or strip 35 may be positioned on the lower surface of the upper section of the member 26, and which extends from both sides thereof. It has been found that a very effective mounting of the springs 32 is secured by clamping the ends of the strap 35 down onto and partly around the spring wire 32 on opposite loop sections thereof. As the spring wires 32 may have slight relative movement with relation to the member 26, or straps 35, fabric or other suitable insulating means 36 may be positioned around the spring wires 32 before securing them in place to prevent any noise occurring on spring flexure.

In the back section 11, the springs 32 are secured to the member 24 and support 30 in the same manner as illustrated in Fig. 6, only in this instance the springs end on both the member 24 and support 30 and form a bowed support therebetween, as shown in Fig. 4.

Fig. 4 indicates that the cushions 14 are formed of cellular rubber but it will be realized that other suitable cushioning material may be substituted therefor. However, it has been found that the zig-zag springs in combination with the cellular rubber, provide a very comfortable seat with good load support characteristics. In some instances, it may be desirable to secure adjacent springs 32 together by suitable connectors (not shown) such as coil springs to prevent side sway of the springs. The springs 32 are prepared for load support by placing thin pads 37 of sisal, rubber bonded hair or other cushioning material thereon. Sheet means, such as burlap or canvas sheets 38, may be carried by the springs 32 to receive the pads 37. Cover means 39 made from a suitable material, usually fabric, then are positioned over each set of the springs 32 and secured to the furniture frame by snaps, clips, or other desired means. An illustrative snap member 40 is shown on the lower edge of the cover 39 and it engages with a complementary snap 40a on the member 26 to secure the cover to the frame. Any suitable padding 50 may be positioned around the frame of the end section 12 and be secured thereto by a cover 50a positioned thereover and suitably engaged with the frame by any desired means, such as snaps similar to the snaps 40 and 40a. It will be realized that in securing cushion material, or covers to the furniture sections, the bolts 15 and 18a and means for engaging with them will in all events be left accessible so that the sections can still be readily secured together.

In some instances, it is necessary to provide additional support for the springs at the seat ends and this result may be achieved by making such springs of stiffer wire than the remainder of the springs. Or, as best shown in Fig. 7, a special spring, such as a zig-zag spring 41 may be positioned under the end spring 32. The support spring 41 then is secured to the spring 32 by clips 43 and to the arm 28 by a strap 45, similar to the strap 35, which extends around the upper

section of the channel arm 28 and is clamped at its ends to the spring 41.

Fig. 9 shows a modified type of connection means for use in securing furniture sections together, as well as for registering them with relation to each other. In this modification, a wedge shaped boss 51 is formed on, or secured to an end member 52 of a back section of furniture and this boss is provided with a complemental tapered seat 53 in the adjacent wall of end section 54 so that the load on the back section, and the section itself, is supported in shear. A nut 55 or other tapped anchor member is suitably secured within the end section 54 so that a wing bolt 56 may extend through aligned holes in the boss 51 and seat 53 and engage the nut 55 to secure the back and end sections together. As many bosses 51 and seats 53 as are required may be formed on the furniture sections and, like the bolts 15 shown in Figs. 1 through 4, may be used in a joint between three sections wherein a suitably shaped and positioned boss would be formed on an extended member on one of such sections for association with a boss and its seat.

Another quickly releasable type of means for securing furniture sections together, in this instance by use of interlocking wedge shape clips, is shown in Fig. 10. The clip comprises a pair of arcuate arms 61 mounted on a base plate 62 that in turn is secured to a furniture section 63. The arms 61 are outwardly flared at their outer ends and are in substantial contact at the lower portion of their outer sections but spaced appreciably farther apart at their upper ends to form a wedge shape receiving member. A complemental clip member 64 is mounted on a base plate 65 carried by a second furniture section 66. This clip member 64 is formed from a metal strip or other suitable material so that it has an enlarged tapered outer end portion 67 which is smaller at its lower end than at its upper end. The clip 64 then is adapted to be positioned in engagement with arms 61 by telescoping the portion 67 into the seat formed by the arms 61 adjacent the base 62. Again, any desired member of clips could be used in securing furniture sections together by positioning complemental clips in proper relation on the sections to be associated but, in all events, a solid engagement results between the sections to be secured together.

Fig. 11 illustrates desirable means for securing a fabric cover to a metal frame member such as a side member 71. A fabric cover 73 extends down the side 71 to a point immediately above a hole 72 and has an enlarged edge binding 74 formed thereon, which binding may include a wire or other suitable reenforcing agent. Then suitable securing means, such as a cap screw 75 is engaged with the tapped hole 72 formed in the member 71 to position an angle clip 76 to the side 71 with a leg 77 thereof engaging the binding 74 to secure it to the furniture frame.

From the foregoing, it is seen that the davenport 10 is much lighter in weight than previous types of davenports, and that the sections of the davenport can readily be separated, when desired, such as in moving the davenport from one home to another. Furthermore, practice of the invention contemplates the provision of a number of different styled, but interchangeable sectioned pieces of furniture so that, for example, a store could supply the special type of arms or back to a piece of furniture, as desired by the prospective purchaser. Thus a novel, improved type of furniture has been disclosed and the objects of the invention have been achieved.

While in accordance with the patent statutes, at least one embodiment of the invention has been specifically illustrated and described herein, it should be clearly understood that the scope of the invention is not limited to, or by, the specific embodiments disclosed, but is defined in the appended claims.

What is claimed is:

1. In a seat, a metal frame comprising an open centered quadrilateral base section having rearwardly extending arms formed thereon, an open centered quadrilateral back section positioned substantially upright between the arms and secured thereto, end frame sections secured to both the back and the base sections and support legs associated with at least one of said sections, said base section comprising box-like front and rear members secured together by channel members, said end sections comprising upright channel members having a sheet secured to their top surfaces and bent down and secured to the upper sections of their sides, all of the components of said frame being formed of aluminum alloy sheet metal.

2. In a seat, a metal frame comprising an open centered substantially rectangular base section having rearwardly extending arms formed thereon, an open centered substantially rectangular back section, and end frame sections, all of the components of said frame being formed box like of light weight sheet metal; means associated with all of said frame sections and said arms and extending through abutted portions thereof for securing them together; a plurality of zig-zag springs secured in parallel relation to said base section and to said back section and extending over the open centers thereof, said springs being bowed upwardly from said base and back sections; sheet means positioned on said springs; cushion means positioned on said sheets; cover means extending over said cushion means; means for securing said cover means to said base section and to said back section; and cellular rubber cushions carried by said base section to form a light weight seat.

3. In a seat construction, a frame having a front and a rear member; and a plurality of zig-zag spring elements secured to and extending in a bowed manner between said members in parallel relation, one end of each of said spring elements being secured to said front member, an intermediate portion of each of said springs being secured to said rear member, and the remaining end of each of said springs being bent back between said members and being secured to an intermediate section of the bowed spring, said last named spring ends connecting substantially perpendicularly to the main load carrying section of said springs to reinforce same resiliently.

4. In a seat construction, a frame having a front and a rear member; and a zig-zag spring element secured to and extending in a bowed manner between said members, said spring being secured to said front member and to said rear member, said spring also being provided with an end section which is bent back between said members and secured to the bowed spring portion in a direction substantially perpendicular thereto to reinforce same.

RALPH C. BATEMAN.
BENJAMIN J. SCHNITZER.

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