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FURNITURE CONSTRUCTION

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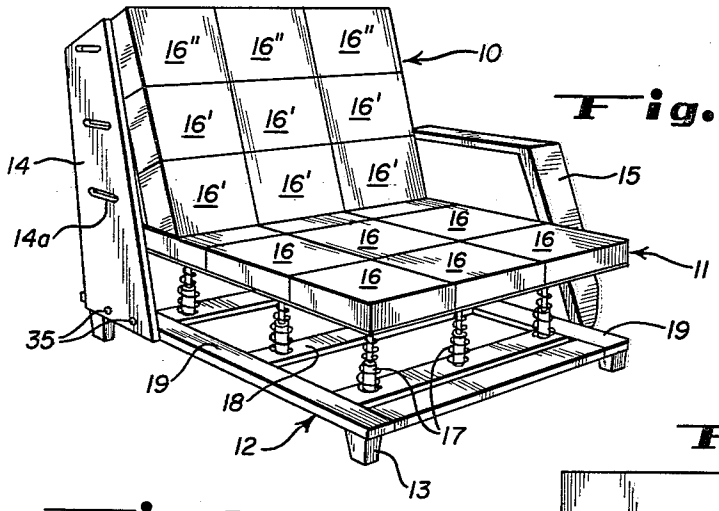


Fig. 1

Fig. 2

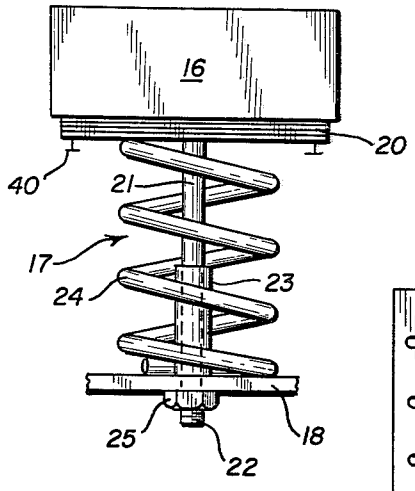
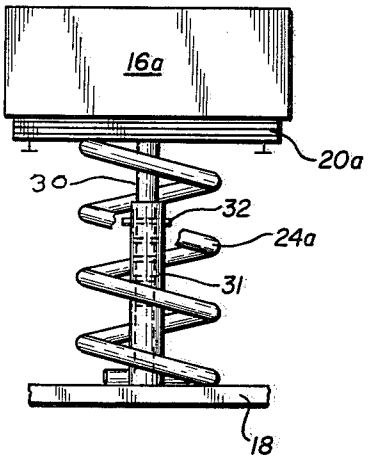


Fig. 3



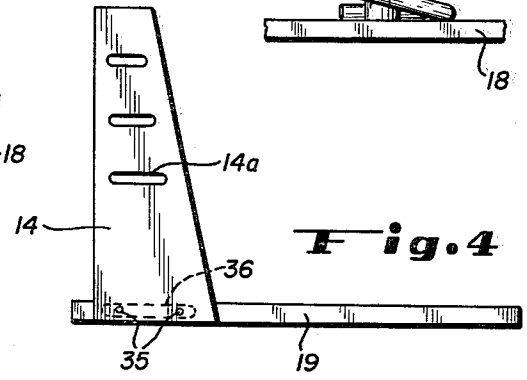


Fig. 4

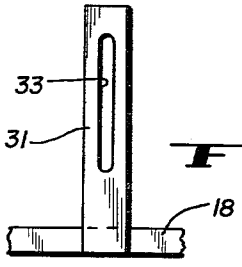


Fig. 5

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FURNITURE CONSTRUCTION

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This invention relates to furniture and more particularly to construction of upholstered furniture.

In conventional construction of upholstered furniture, it has been the practice to mount a plurality of springs on a main frame and to tie or otherwise interconnect these springs into a unitary group. This unitary group is then covered with padding and fabric and cushions are then placed on the assembly. This practice has been an attempt to distribute applied weight across all or most of the springs in the group. However, especially in chairs and sofas, weight is substantially always applied in the same general area, and this has the tendency to continuously apply strain to the same portions of the lacing and the same springs.

Accordingly, it is an object of this invention to provide improved furniture construction, which is particularly suited for upholstered furniture.

Another object of the invention is to provide improved spring suspensioning arrangements for furniture construction.

A further object of this invention is to provide furniture construction in which cushioning springs separately support segments or increments of the weight-supporting surface thereof, which cushioning springs are independently adjustable over the extent of the weight-supporting surface to counteract repeated application of weight in localized areas.

Yet another object of the invention is to provide adjustable furniture construction adapted for selective contouring to various body shapes, as well as to selectively cushion various applied weights.

Briefly, in one embodiment, furniture constructed according to this invention includes a seat portion and an adjustable back portion therefor. Both the seat and back portions are comprised of a plurality of separately supported sections of substantially the same size. Each section is substantially smaller than an assembled unit and each is independently mounted on its own adjustable cushioning spring assembly. The cushioning spring assemblies of the back and those of the seat portions are mounted on separate frames and the back frame is adjustable relative to the seat frame for varying the depth or length of the seat. Further, the group of sections of each of the back and seat portions are adapted for cooperative but separate tensioning of the spring assemblies for various weights and body contours.

Other objects and further features and advantages of furniture construction according to the invention will be apparent from a study of the following detailed description with reference to the drawings, in which like reference numerals are used to designate like parts in the several views.

In these drawings:

FIG. 1 is a perspective view of partial construction of a chair embodying the concepts of the invention;

FIG. 2 is a fragmentary side elevation of a portion of chair construction of FIG. 1, showing details of one form

of a cushioning spring assembly and a segment of the seat of the chair;

FIG. 3 is a fragmentary side elevation of an alternative cushioning spring assembly usable in constructing furniture according to the invention;

FIG. 4 is a side elevation of a portion of the frame assemblies for back and seat portions of the chair of FIG. 1; and

FIG. 5 is a fragmentary side view of a portion of the assembly of FIG. 3.

In FIG. 1 an upholstered chair constructed according to the invention is shown in a partially finished state and it includes a back portion **10**, a set portion **11**, a floor-supported bottom frame **12** spaced above the floor by legs **13**, and an adjustable back frame **14**. An arm **15** is shown attached to one side of the chair. In the finished chair, of course, a duplicate arm would be included on the other side. And if no arms are desired, this is likewise within my concepts.

The bottom or seat portion **11** of the chair is comprised of a plurality of pads or segments **16** of substantially equal dimension and adapted to cooperate with each other to form a contiguous weight-supporting surface for the seat portion. Each segment is considerably smaller than a seat or back of a conventional sized chair. The back portion **10** is likewise comprised of a plurality of pads or segments **16'** which cooperate with each other to form a contiguous weight-supporting surface for the back.

Each of the segments **16** is independently and separately supported on its own cushioning spring assembly **17** at an upper end thereof. The bottom end of each of the plural cushioning spring assemblies is mounted on one of the slats **18** which are mounted across the side members **19**.

Referring to FIG. 2, each of the segments **16** is mounted on a platform **20**, preferably of slightly smaller dimension than the segment **16**. Each platform **20** is mounted on or otherwise attached to the upper end of an elongated shaft **21** of a cushioning spring assembly **17**. The lower end of each shaft **22** is externally threaded and is telescoped through a sleeve **23**, which is integrally mounted or otherwise fixed on one of the slats **18**, and extends through the slat. Between the upper surface of the slat **18** and the bottom surface of a platform **20** is positioned a coil spring **24**. Tension of each spring **24** is adjustable by a nut **25** threadedly mounted on the threaded portion **22** of a shaft **21** which protrudes through the slat.

Each of the segments **16** is preferably a self-sustaining body and may be fabricated of any of the well known padding materials, such as natural or synthetic fibers, foamed resins or rubbers, rubberized hair and the like. The platform **20** is preferably flat and may be fabricated of cast metal, plastic, leather, wood or the like and in some instances of a relatively thick, resilient pad of rubber. Rubber, plastic and leather platform construction permits some bending and deformation, thereby lending more comfort due to give or bend with the weight of a person. Further, it may be sometimes desirable to curve the platforms **20** in a manner that adjacent ones cooperate to form desired body-conforming contours. The segments **16** are adhesively bonded or otherwise joined on the upper surface of the respective pads **20** to prevent relative movement therebetween.

The shafts **21** are preferably non-circular and the internal configuration of the sleeve **23** is so formed as to

conform to the configuration of the shafts **21** to permit reciprocal movement and prevent rotation of the shafts in the sleeves.

In FIG. 3 an alternative cushioning spring assembly is shown. It is comprised of an upper pad or segment **16***a*, a platform **20***a* and a sprnig **24***a*, which are similar to the like parts in the assembly of FIG. 2. However, a shaft **30** and a sleeve **31** are provided which are fabricated in a different manner. The shaft **30** need not extend through a slat **18** but is adapted to be sustained or supported within the sleeve **31** by the selective insertion of a locking pin **32**. A plurality of spaced apertures formed transversely through the shaft **30** is adapted for selectively positioning the pin **32** in the shaft. The ends of the pin ride in elongated slots **33** formed through opposite sides of the sleeve **31** (see FIG. 5). Selective insertion of the pin **32** through various of the apertures formed through shaft **30** allow various spring tensions.

Also, by the provision of the elongated slot **33** in sleeve **31** more resiliency or apparent softness and give is provided in the seat portion of a chair having this arrangement. When a person sits in the chair, pressure is exerted on segment **16***a* through platform **20***a* to move shaft **30** downwardly in opposition to the spring **24***a*. The foregoing downward movement is limited by the lower extremity of slot **33** and when the weight of a person is removed from segment **16***a* the return or recovery of the segment and spring is limited by the upper extremity of slot **33**.

Further, with the arrangement of FIG. 3 a cylindrical shaft **30** may be used since rotation is prevented by pin **31** cooperating with slot **33**. This may be a less expensive and thus more economical construction. However, the arrangement of FIG. 2 permits a greater range and accuracy of spring tensioning by tightening or loosening nut **25** on the threaded end **22** of shaft **21**.

The pads or segments **16'** which make up the back portion of the chair are similar to segments **16** and are mounted on cushioning spring assemblies similar to those supporting the pad **16**. A plurality of slats similar to slats **18** extend transversely of the back frame **14** and are adapted to have their end portions maintained in one of the slots **14***a* formed through the frame **14**. The lower end of each side of frame **14** is fastened to one of the bottom frame members **19** by a pair of spaced bolts **35** which pass through a slot **36** (FIG. 4) formed through frame members **19**. Suitable locking means such as nuts or the like, which are not shown in the drawings, are used to fix bolts **35** in place and thus hold frame **14** in a fixed relation with bottom frame **12**. Because of the length of slot **36** and the relative spacing of bolts **35**, it is possible to move the back frame **14** back and forth relative to frame **12**. With this arrangement, the relative depth of the seat portion carried by frame **12** may be varied.

In practice, I prefer to have the uppermost row of pads or segments **16"** on the back portion **10** fixed. This is for economy in production and since the uppermost row encounters relatively small ranges of weight, the inclusion of an adjustable spring assembly is not always necessary. However, it should be understood that in some constructions, such as those wherein the back portion is lower and wherein they would contact a relatively increased amount of weight, the cushioning spring assemblies are desirable.

When an item of furniture has been constructed according to the foregoing teachings, I prefer to provide a loose covering somewhat in the nature of a furniture slip cover for the bottom and back portions of the chair. The cover may be one-piece or it may be two pieces, one for the seat and a separate one for the back. To the end I provide a fabric engaging hook **40** at each corner of the bottom surface of the respective platforms **20** or **20***a* to which a cover may have its peripheral edge portions selectively attached.

In discussing the adjustable feature of the back frame **14** by which the relative depth of the seat portion may be varied, I noted that a slot **36** was formed in the bottom frame members **19**. I also provide for this feature by forming a plurality of spaced apertures or holes through frame members **19** which are adapted for selective reception of the bolts **35**.

While the foregoing description has been relative to the construction of a chair, it is obvious that it is equally applicable to the construction of sofas, chaise lounges, stools or hassocks, and similar items of furniture. It is equally applicable to construction of such as automobile seats and other vehicle furniture. One of the desirable features of my construction in such furniture is the ease with which covers may be changed and removed for cleaning and washing.

One valuable aspect of the invention is ease of assembly without special tools. This permits the furniture to be shipped in a knocked-down condition (disassembled), to save shipping space, and it is then easily assembled by unskilled persons.

Having thus described my invention with sufficient particularity and detail as to allow those skilled in the art to practice it, what I desire to have protected by Letters Patent is set forth in the following claims.

What is claimed is:

1. An article of furniture having at least a seat portion, said portion composed of a plurality of substantially identical separate sections mounted in juxtaposition and cooperating to form a contiguous upper surface, each section including a relatively thick upper pad portion, fabricated of a relatively soft material, a relatively thin bottom portion bonded to the bottom of each pad and fabricated of a relatively stiff yet bendable material, and the upper surfaces of the plurality of pads cooperating to form the contiguous upper surface, each of the separate sections independently supported on a separate resilient cushioning assembly, a floor supported frame, each of the resilient cushioning assemblies including telescoping upper and lower sections, the upper section of each of the cushioning assemblies being the smaller and being attached to the relatively thin bottom portion of each of the plurality of sections, and the lower section of the cushioning assembly being larger and extending upwardly from the floor supported frame, a coil spring encompassing each resilient cushioning assembly and extending between the lower portion of the plurality of separate sections and an upper surface of the floor supported frame arranged to resist forces exerted on the contiguous surface formed of the plurality of separate sections, and means carried by each of the resilient cushioning assemblies arranged to prevent relative rotation of parts thereof and to selectively vary spring tension.

2. An article of furniture having a back portion and a seat portion, a floor supported frame for the seat portion, and a back frame for the back portion, both the back portion and the seat portion composed of a plurality of separate sections mounted in juxtaposition and cooperating to form a contiguous back surface and a contiguous seat surface respectively, each of the plurality of separate sections including a relatively thick upper pad portion fabricated of a relatively soft material and a relatively thin bottom portion bonded to the lower surface of each pad and fabricated of a stiff yet bendable material, each of the plurality of separate sections having an independent cushioning spring assembly extending between the relatively thin bottom portions thereof and the floor supported seat frame, each said cushioning assembly including a lower portion extending upwardly from the frame and an upper portion extending downwardly from each of the separate sections, the upper and lower portions of the cushioning assembly arranged for selective telescoping relative to each other, a coil spring encompassing the upper and lower portions of the cushioning assembly and extending from

the seat frame to the bottom portion of each of the separate sections, whereby said spring normally maintains the plurality of separate sections to form a contiguous surface but arranged to resist forces exerted on said surface when weight is placed thereon, said back frame selectively movable the length of the floor supported seat frame, means cooperating with the seat frame and the back frame to lock them in selective position thereby defining the depth of the seat frame, and means carried by each of the separate resilient cushioning assemblies arranged to vary the relative compression of the respective coil springs.

3. The article of furniture of claim 2 in which means

are carried by the relatively thin lower portion of each of the plurality of separate sections arranged to cooperate for maintaining a cover over the plurality of separate sections forming the seat portion and a cover over the plurality of separate sections forming the back portion.

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