April 3, 1928.

1,664,934

J. KRONHEIM

CHAIR OR COUCH

Filed May 13, 1927

2 Sheets-Sheet 1

FIG. 1.

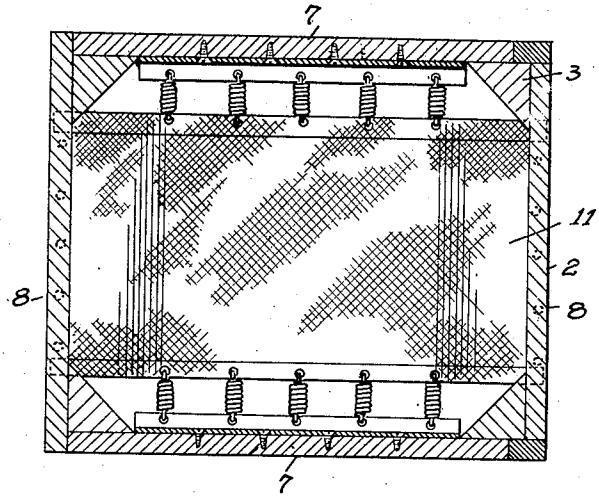
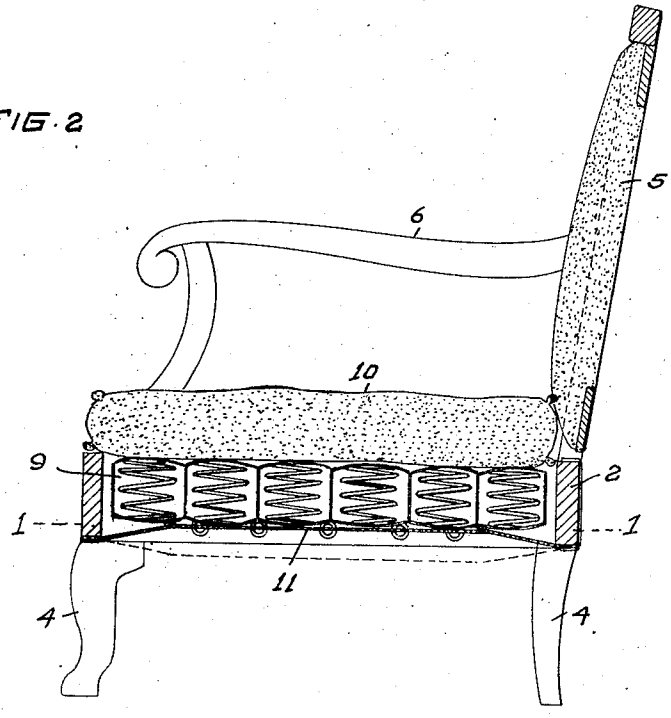


FIG. 2



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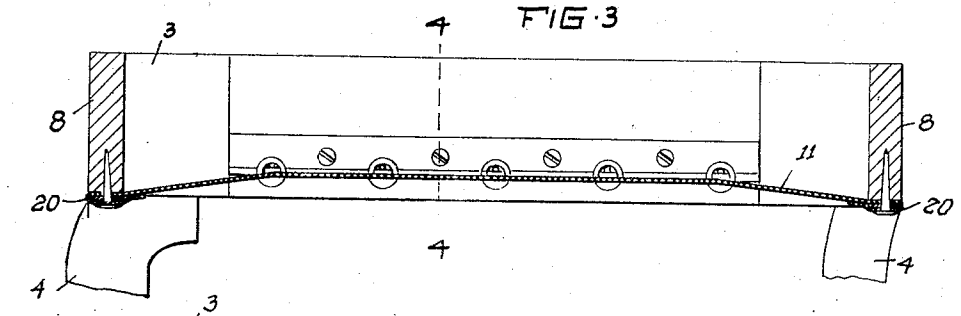
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2 Sheets-Sheet 2

FIG. 3



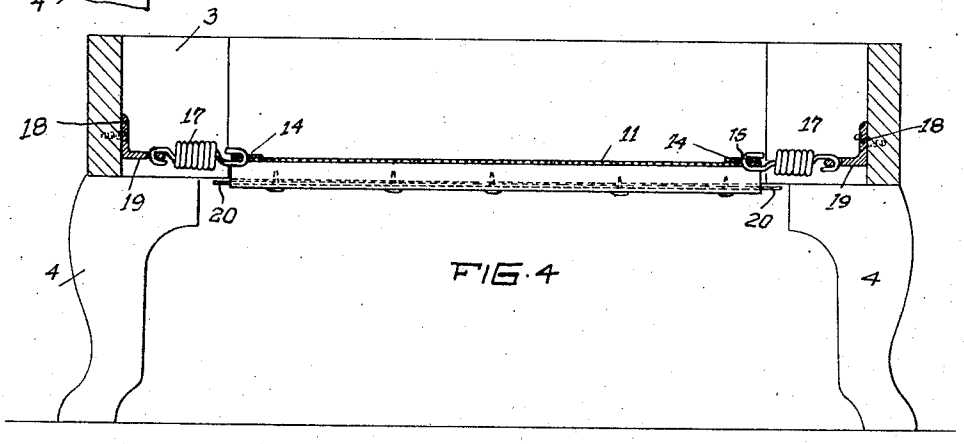


FIG. 4

FIG. 5

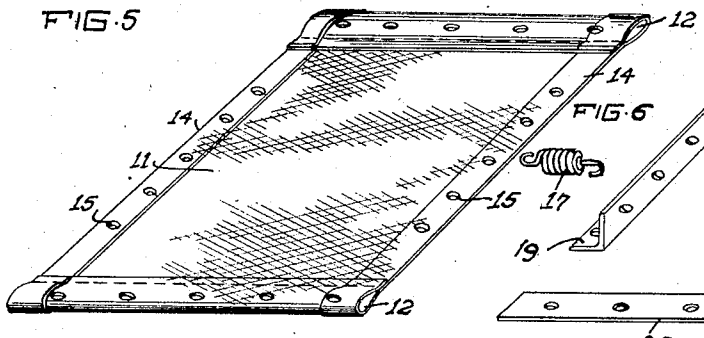
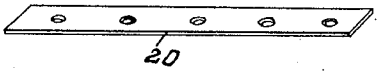


FIG. 6

FIG. 7

FIG. 8



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Patented Apr. 3, 1928. 1,664,934

UNITED STATES PATENT OFFICE.

JACOB KRONHEIM, OF CLEVELAND, OHIO.

CHAIR OR COUCH.

Application filed May 13, 1927. Serial No. 190,979.

My invention relates to an improvement in flexible bottoms for chairs, couches, etc., and the primary object of the invention is to provide a durable flexible bottom of simple construction adapted to be readily connected to a chair or couch frame and when so affixed to support a relatively heavy load with maximum cushioning effect and without undue strain on the connections. To foster that object the connections for the flexible bottom are in part resilient and yielding, and in part fixed and unyielding, and the bottom is supported thereby in a particular way to permit it to flex within limits under the control of the yielding connections preliminary to placing any strain and stress on the fixed and yielding connections, all as hereinafter described and more particularly pointed out in the claims.

In the accompanying drawings, Fig. 1 is a top and sectional view on horizontal line 1—1 of Fig. 2, of a chair embodying my improvement, and Fig. 2, is a vertical section thereof. Fig. 3 is a sectional view, on an enlarged scale, of the base part of the chair shown in Fig. 2, but without a spring cushion thereon, and Fig. 4, is a vertical section on line 4—4 of Fig. 3. Fig. 5 is a perspective view of the flexible bottom which is made of woven fabric or equivalent material. Fig. 6 is a perspective view of a helical spring, one of the resilient connections for the flexible bottom. Fig. 7 is a perspective view of one of the angle irons which is secured to the side rail of the chair frame. Fig. 8 is a perspective view of one of the metal fastening strips or inserts used in each loop end of the flexible bottom.

The invention is particularly adaptable and useful applied to upholstered chairs, for example, a chair having an open rectangular base frame 2 made of wood and reenforced within its corners by angle braces 3, and supported at its corners by legs 4. The chair may also include a back 5 and arms 6, and the side rails 7—7 of frame 2 are usually longer than the front and rear rails 8—8, while the height of all these rails is such as to provide a relatively deep compartment within which a separate spring cushion or pad 9 may be removably confined. As shown, a second cushion containing down or other suitable filling material is superposed upon spring cushion 9, and both of these cushions are jointly supported by and upon a flexible bottom 11 made of woven fabric, for example, canvas doubled upon itself and stitched together at its front and rear ends to provide end loops 12—12 extending transversely the full width thereof. The longer side edges of canvas member 11 may be folded or hemmed, and these folded or hemmed portions 14—14 may be perforated at spaced intervals and provided with metal eyelets or grommets 15 at such perforations. The length over all of bottom member 11 is somewhat greater than the length over all of frame member 2 so that when the loop ends 12 are fixed to the bottom edges of the front and rear rails 8 the said bottom member is free to flex upwardly and downwardly within limits, say as represented in full and dotted lines in Fig. 2. Then in order to sustain the main area of the flexible bottom piece of canvas horizontally in a higher plane than the opposite loop ends 12 where affixed to the bottom edges of rails 8—8, the hemmed side edges 14 are connected to the side rails 7—7 by separate sets of helical springs 17—17 hooked at their outer ends to a pair of perforated angle irons 18—18. Thus it should be noted that these angle irons are screwed to the inner faces of said side rails so that the horizontal flange 19 of each lies in a higher horizontal plane than the bottom edges of the front and rear rails, and that the main or central portion of flexible bottom 11 is stretched taut and flat transversely between the side rails at the same elevation as said flanges, and that the opposite ends of bottom 11 are stretched on straight lines sloping downwardly to the bottom edges of the rear and front rails, see Figs. 3 and 4. Therefore, when a load is placed on the flexible bottom it will flex and distribute the load to the two rows of helical springs, and if this load is so heavy that it stretches the springs in considerable degree and the flexible bottom is pressed downwardly below the horizontal plane of the looped ends 12 all further stresses and strains are transferred to the fastenings at said loops. However, the main stresses have been absorbed by the springs, and only the remainder of the strain is imposed at the loops where fastened to the bottom ends of the front and rear rails 8—8.

Loops 12 are fastened to rails 8—8 by nails or screws, and preferably perforated metal strips 20 are inserted within the loops 12 to provide a straight rigid connection through which the nails or screws are adapt-

ed to pass and to fasten the loop ends fixedly in straight alignment with the edges of the said rails 8—8. Moreover, the metal inserts 20 distribute the strains and stresses over the entire area of flexible bottom 11 after said bottom has been flexed downwardly its full limit by a load placed on the cushions. When so flexed downwardly the entire seat is depressed, but as soon as the load is removed from the seat the helical springs will contract and raise the flexible bottom to its normal position thereby restoring the cushions forming the seat to their normal place of rest.

What I claim, is:

1. A chair or couch having a rectangular base frame, a flexible bottom of narrower width than said frame having its opposite ends fixed directly to the bottom of the front and rear rails of said frame, and springs connecting the opposite sides of said flexible bottom to the side rails of said frame, said springs being arranged to stretch the middle area of said bottom and hold the same normally in a higher plane than the opposite ends of said flexible bottom where fixed to the front and rear rails.

2. A chair or couch, comprising an open rectangular base frame, a flexible bottom made of woven fabric having loops at its opposite ends, means adapted to fix said looped ends to the bottom edges of the front and rear rails of said frame, and springs adapted to connect the opposite sides of said flexible bottom with the side rails of said frame, said opposite sides of said flexible bottom being connected to said side rails in a plane above said bottom edges of the front and rear rails of said frame.

3. A chair or couch, comprising an open rectangular base frame, a flexible bottom made of woven fabric having its opposite ends folded to provide loops, metal inserts within said loops, means fastened through said loops and inserts adapted to connect said flexible bottom rigidly with the front and rear rails of said open frame, angle irons fixed to the side rails of said frame at a higher elevation than the looped ends of said flexible bottom where fixed to the front and rear rails, and springs connecting the opposite sides of said flexible bottom with said angle irons.

In testimony whereof I affix my signature.

JACOB KRONHEIM.