Dec. 22, 1931. J. W. BOWERSOX 1,837,847

UPHOLSTERING AND MATTRESS SPRING

Filed Nov. 15, 1927 2 Sheets-Sheet 1

Fig. 1

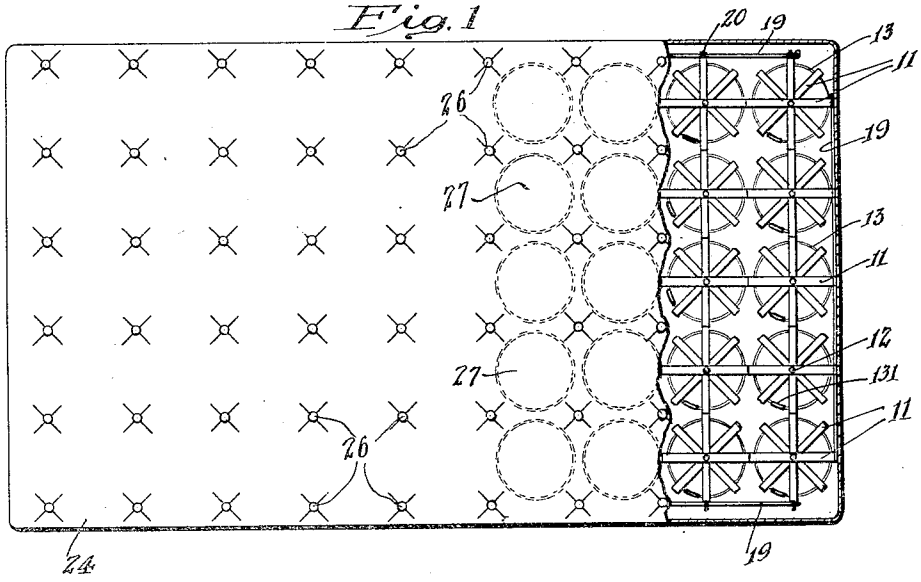
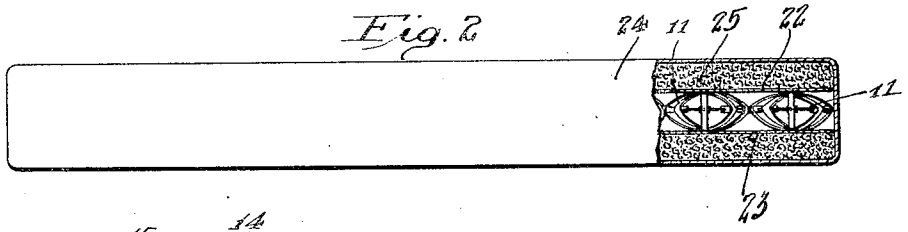


Fig. 2



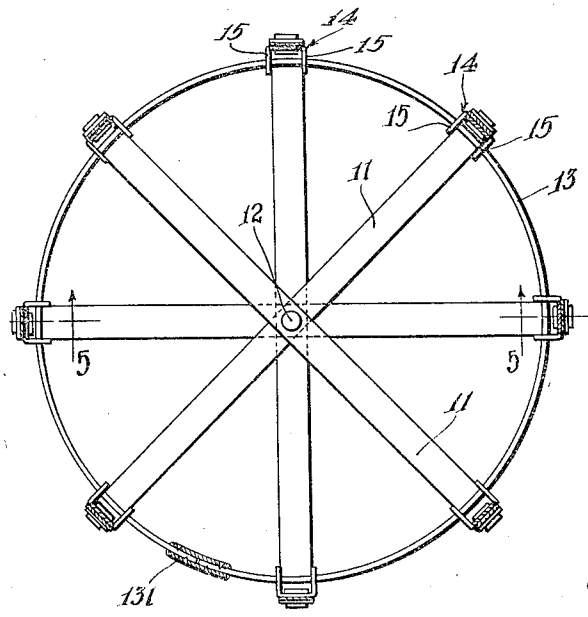
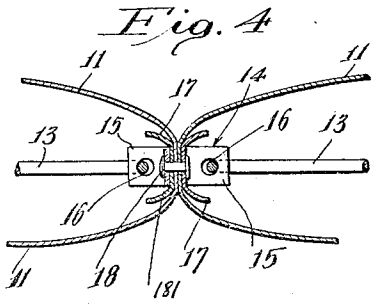


Fig. 3

Fig. 4



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Dec. 22, 1931. J. W. BOWERSOX 1,837,847

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Filed Nov. 15, 1927 2 Sheets-Sheet 2

Fig. 5

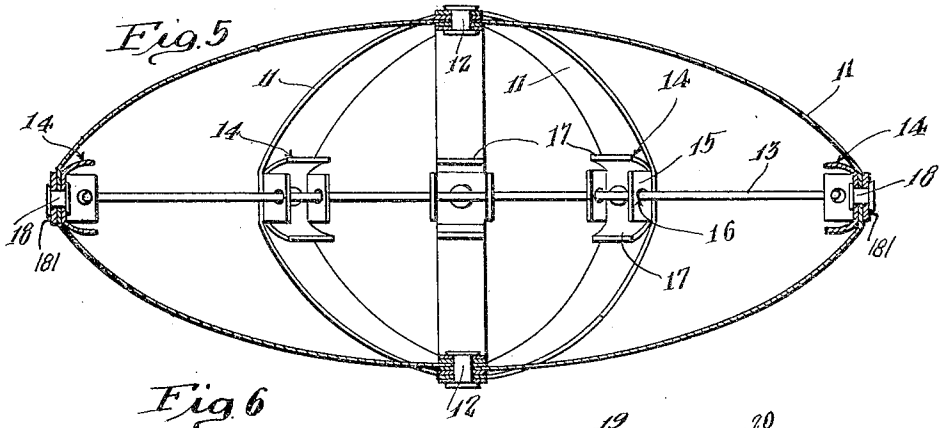


Fig. 6

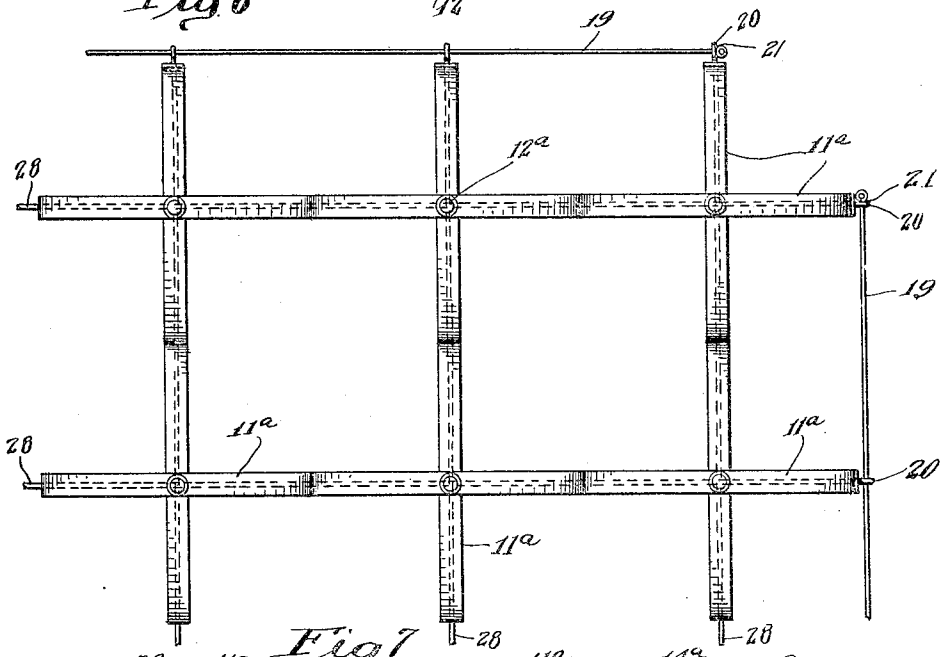


Fig. 7

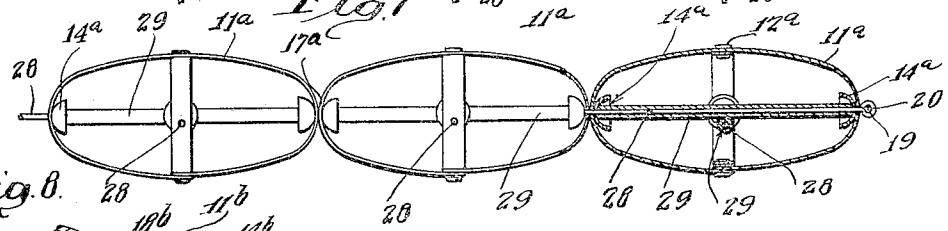
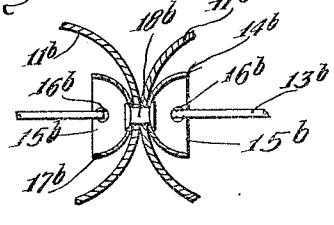


Fig. 8.



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UNITED STATES PATENT OFFICE

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UPHOLSTERING AND MATTRESS SPRING

Application filed November 15, 1927. Serial No. 233,347.

This invention relates to springs of the character suitable for use in upholstering and in mattresses, and an object of the invention is to produce a spring of this character having a relatively large supporting area.

Another object is to provide a construction that will admit of the upholstering or mattress being depressed in any one spot without lateral expansion of the springs.

Another object is to make provision for preventing the clock spring elements from bending too sharply, thus avoiding breakage thereof.

Another object is to provide a relatively inexpensive construction.

Further objects and advantages will appear in the sub-joined detailed description.

The accompanying drawings illustrate the invention.

Figure 1 is a plan view of a mattress, the cover of which is partly broken away to disclose a number of springs embodying the invention.

Figure 2 is an edge view of Fig. 1, the cover being partly broken away to disclose some of the inside elements.

Figure 3 is an enlarged plan view of one of the springs, partly in section.

Figure 4 is an enlarged vertical section of fragments of two of the springs joined together.

Figure 5 is an enlarged vertical section on the line indicated by 5—5, Fig. 3.

Figure 6 is an enlarged fragmental plan view of an assembly of springs of modified form.

Figure 7 is an edge view of Fig. 6, one of the springs being shown in section.

Figure 8 is a fragmental sectional view, similar to Fig. 4, of a preferred form of springs embodying the invention.

First referring to the form of the invention illustrated in Figs. 1 to 5, inclusive, each spring is constructed as follows: A number of clock-spring elements in the form of oval bands 11 are connected together at their short axes by rivets 12, or their equivalents, the elements being placed one inside of another and extending at an angle to one another. It is desirable to employ two or more of the elements 11, good results being obtained by employing four such elements, placed so that the ends of their longitudinal axes are equally spaced in a circle.

Within the elements 11 is a hoop 13 constructed of spring wire, the ends of the wire being connected by a suitable connector 131.

The hoop 13 is loosely connected with the elements 11 at the extremities of the longitudinal axes of said elements and the connection, in this instance, is made as follows: Riveted at 18, or otherwise secured, to each of the elements 11 at the extremities of the longitudinal axes of said elements is a flanged member which is indicated, in general, by the character 14. The members 14 are secured to the inner faces of the elements 11 and the flange portions 15 thereof project inwardly. The flange portions are provided with holes 16 through which the hoop 13 passes. The flange portions 15 are at opposite ends of the member 14. The upper flange portion 17 curves upwardly and inwardly and the lower flange portion 17 curves downwardly and inwardly and each forms a stop to limit bending of the elements 11 at points adjacent to the extremities of the longitudinal axes of the elements 11.

The hoop 13 serves two purposes, since it functions to prevent elongation of the elements 11 and also limits lengthwise contraction of said elements 11 and thereby establishes the thickness or height of the spring.

In joining together a number of the springs, constructed as above described, some of the rivets 18 will pass through elements 11 and members 14 of adjacent springs, as clearly shown in Fig. 4. Thus a spring unit for mattresses or upholstering may be easily constructed by connecting a number of springs together in rows running longitudinally and crosswise of the mattress, as shown in Fig. 1. Washers 181, as shown in Fig. 4, may be used on the rivets 18 adjacent to those heads of the rivets that are formed after the rivets are in position for connecting adjacent springs.

Those springs that are positioned along the edges of the mattress may, if desired, be connected together along their outer margins

by frame wires or rods 19 which pass through eyes 20 with which some of the rivets 18 are provided. This construction may be readily seen in Fig. 6 of the drawings. The frame wires 19 and the springs are thus loosely connected together. At their ends the wires 19 are provided with shoulders 21 to prevent the frame wires from pulling through the adjacent eyes 20.

After the spring unit has been constructed, as above described, upper and lower fabric members 22, 23 will be placed above and below the spring unit and the spring unit and members 22, 23 will be encased in a suitable fabric casing 24 and then cotton or hair filling 25 will be placed between the members 22, 23 and the wall of the casing 24. This method of enclosing the springs is well understood in this art.

The mattress may be tufted, if desired, at points outside of and between adjacent springs, as indicated at 26 so as to form the usual biscuits indicated at 27.

It will now be readily understood that each biscuit is supported by a spring that functions independently of the remaining springs. Depressing any of the springs at its center will simply flatten the spring and those portions of the biscuit that lie between the center and the periphery of the spring will be yieldingly supported by the elements 11, since at said points said elements 11 are held up by reason of the said elements 11 expanding slightly between their centers and their peripheries. If depression of any of the biscuits should occur at a point between the center of the spring and the periphery thereof, the element or elements 11 on which the pressure comes cannot be bent at the extremity of its lonitudinal axis at a sharp enough angle to crystallize or break said elements because of the provision of the stops 17, said stops unyieldingly supporting the ends of the elements 11 when said elements are bent sufficiently to engage said stops.

It will be seen that the oval shape of the elements 11 gives a relatively large and flat supporting area for each spring so that, not only is the center of each biscuit well supported but those portions of each biscuit that are nearer the margins of the biscuit are also well supported so that there will be little liability of hollows forming in the mattress or upholstering and becoming permanent. All portions of the biscuits will be expanded into their original shape as soon as the pressure that depresses them is removed.

A modification of the spring described above is illustrated in Fig. 7 and the parts that correspond in function to those previously described are indicated by the same reference characters with the addition of the letter "*a*". In this spring there is no hoop corresponding to the hoop 13 above described but endwise expansion and contraction of the elements 11*a* are limited by wires 28 placed along the longitudinal axes of the elements 11*a* and by tubes 29 through which the wires 28 extend. The wires 28 are continuous through a number of the springs and the tubes 29 terminate, one within each spring. On the wires 28 seated against the ends of the tubes 29 are members 14*a* that are dished in shape so that the upper and lower portions thereof constitute stops 17*a* that correspond in function to the stops 17 above described. It is understood that the members 14*a* may be used in place of the members 14 in the form of the spring illustrated in Figs. 1 to 5, inclusive, since the mode of fastening is just the same and the only difference is the shape.

In Fig. 8 is illustrated a slightly different construction than shown in Fig. 4. The elements that function the same as those described in connection with Figs. 1 to 5 are indicated by the same reference characters with the addition of the letter "*b*". In this instance the rivets 18*b* pass through the clock spring elements 11*b* and through flanged members 14*b* which are dished or cupped so that the side portions 15*b* of the rim portion serve to connect the members 14 with the hoop 13*b* and so that the upper and lower portions 17*b* serve as stops to limit compression of the elements 11*b* at points adjacent to the extremities of the long axes of the elements 11*b*.

I claim:

1. An upholstering and mattress spring comprising clock spring bands positioned at an angle to one another, flanged members secured to the bands and provided with holes, and a hoop passing through said holes.

2. An upholstering and mattress spring comprising clock spring bands positioned at an angle to one another, flanged members inside of and secured to the bands and provided with holes, and a hoop passing through said holes, portions of the flanges forming stops to limit compression of the bands adjacent thereto.

3. An upholstering and mattress spring assembly comprising hoops, clock spring bands connected with each hoop and positioned at an angle to one another, some of the bands associated with different hoops being in alignment, and a means rigidly connecting the aligned bands to one another to form a continuous spring assembly.

4. An upholstering and mattress spring comprising clock spring bands positioned at an angle to one another, flanged members secured to the bands and provided with holes, the flanges forming stops to limit bending of the bands at points adjacent to said members, and a hoop passing through said holes.

5. An upholstering and mattress spring

assembly comprising a plurality of hoops, clock spring bands associated with each hoop and positioned at an angle to one another, some of the bands associated with different hoops being in alignment, and means rigidly connecting the aligned bands to one another and connecting said aligned bands with the hoop.

6. An upholstering and mattress spring comprising a hoop, spring bands connected with the hoop and positioned at an angle to one another, and means above and below the hoop at each of diametrically opposite points on each band to positively limit compression of the band adjacent the said points.

Signed at Los Angeles, Calif., this 18 day of August, 1927.

JOSEPH W. BOWERSOX.