Dec. 11, 1951 C. F. WHITE 2,578,331

BEDSPRING

Filed June 12, 1946 2 SHEETS—SHEET 1

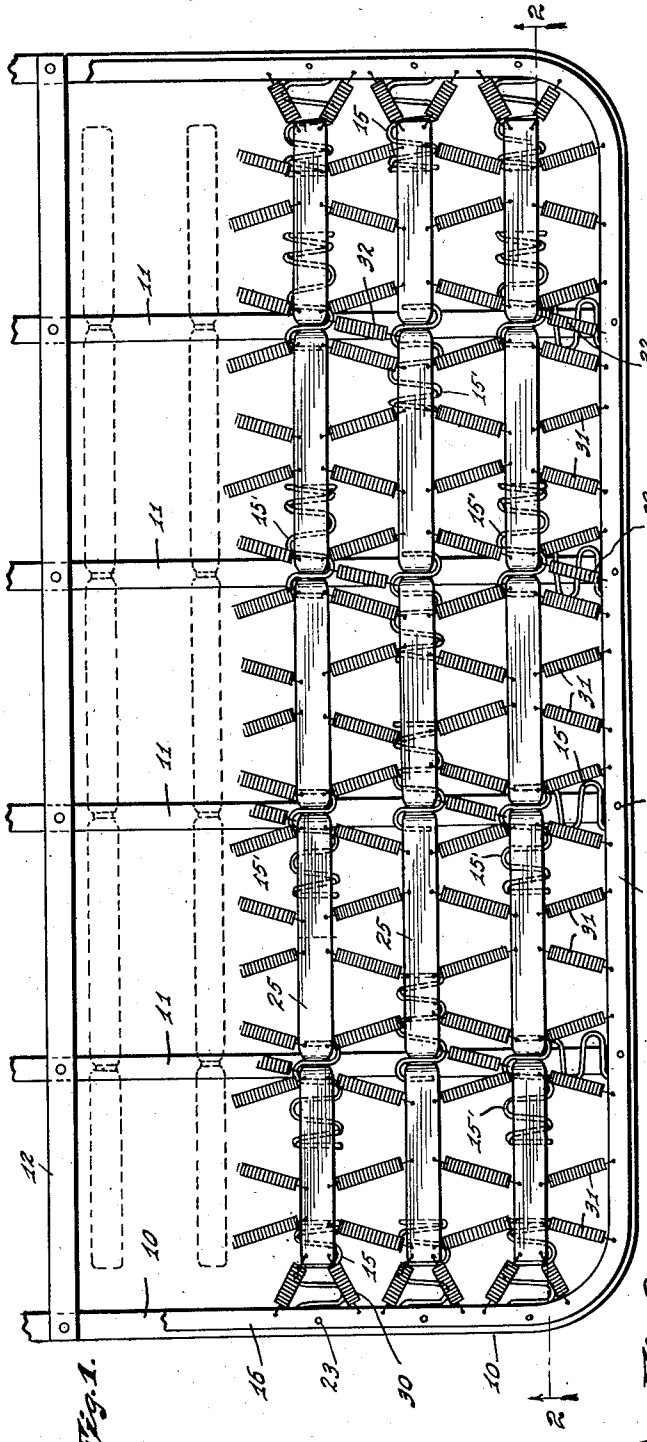

Fig. 1.

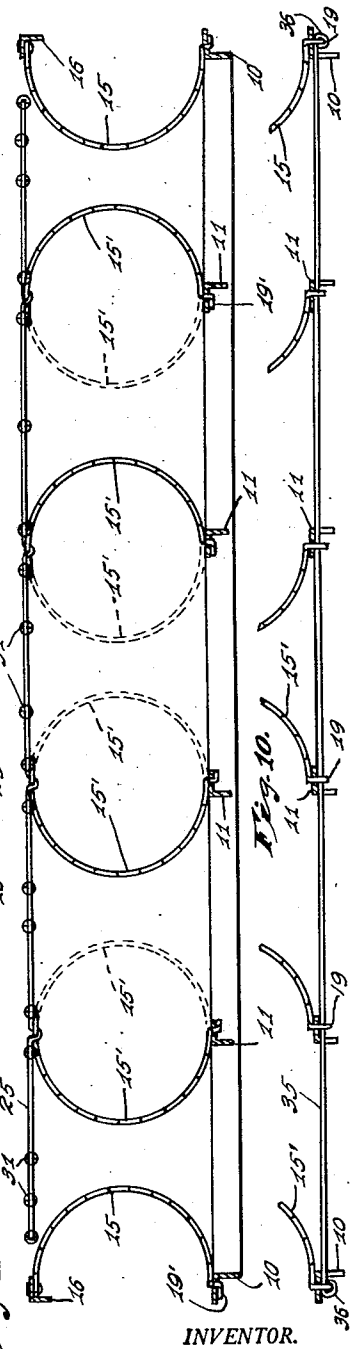

Fig. 2.

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Fig. 3.

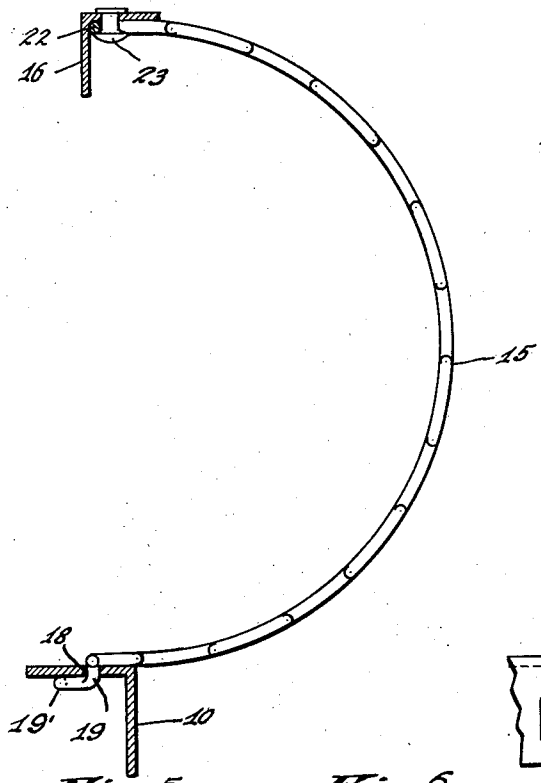


Fig. 4.

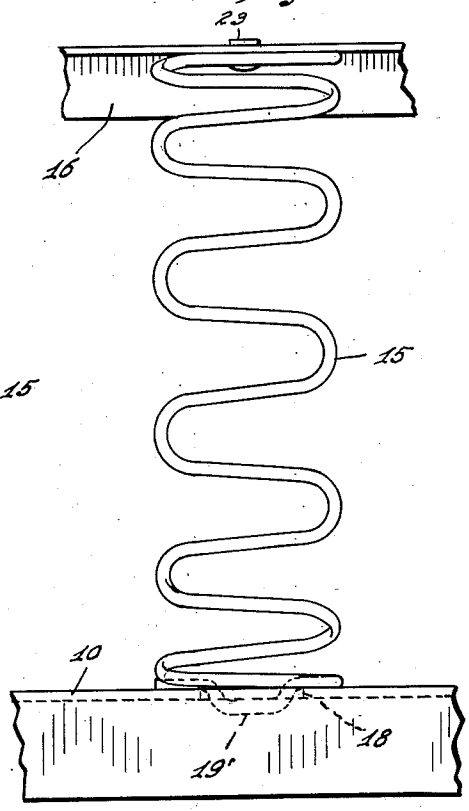


Fig. 5.

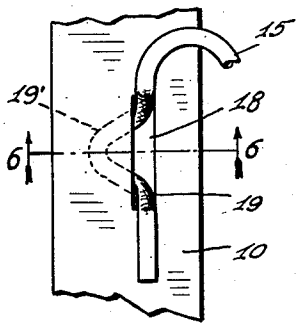


Fig. 6.

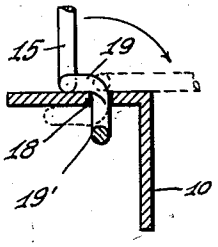


Fig. 7.

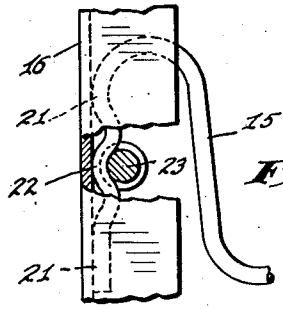


Fig. 8.

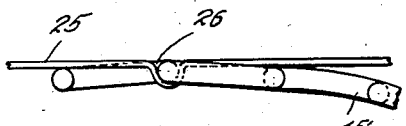
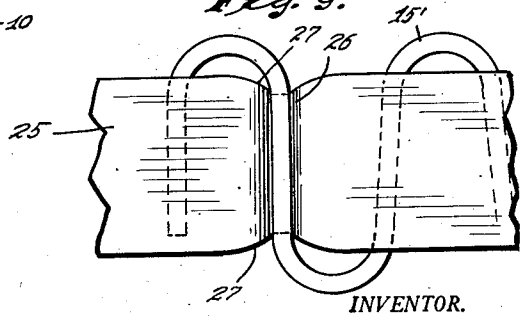


Fig. 9.



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Patented Dec. 11, 1951 2,578,331

UNITED STATES PATENT OFFICE

2,578,331

BEDSPRING

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4 Claims. (Cl. 5—247)

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My invention relates to bed springs and has for its primary object the provision of a bed spring which will possess advantages over prior bed springs of which I am aware. More specifically, it is my object to produce a bed spring which will provide a resilient support for a mattress and which will be capable of yielding locally under localized loads. Another object of my invention is to produce a bed spring which will be light in weight, which may be simply and economically manufactured, and which will be durable in use.

In carrying out my invention I employ a base frame from which there extend upwardly a multiplicity of generally semicircular, resilient elements each in the form of a sinusoidal wire. The resilient elements are desirably arranged in parallel rows, and the upper ends of the elements of each row are interconnected by flexible metal strips. Surrounding the assembly of such strips is a border frame to which the ends of the strips are connected through helical springs. Additional helical springs may be employed to interconnect adjacent strips and to connect end strips of the series with the border frame.

The accompanying drawings illustrate my invention: Fig. 1 is a fragmental plan view of a bed spring; Fig. 2 is a vertical section on the line 2—2 of Fig. 1. Fig. 3 is a fragmental section similar to Fig. 2, but on an enlarged scale, indicating the form of the resilient elements in detail; Fig. 4 is a side elevation of the resilient element illustrated in Fig. 3; Fig. 5 is a fragmental plan view of a portion of the base illustrating the manner in which each resilient element may be secured thereto; Fig. 6 is a vertical section on the line 6—6 of Fig. 5; Fig. 7 is a fragmental plan view of a portion of the border frame illustrating the manner in which resilient elements may be secured thereto; Fig. 8 is a fragmental elevation illustrating the manner in which the resilient elements may be secured to the flexible strips; Fig. 9 is a plan view of the construction shown in Fig. 8; and Fig. 10 is a view similar to Fig. 2 showing a modified construction.

The spring assembly illustrated in the drawings comprises a generally rectangular base frame including a peripheral member 10 and longitudinally extending intermediate members 11, all conveniently formed of angle iron. At one or more points in the length of the assembly, cross members 12 may be provided extending between the sides of the peripheral member 10 and secured thereto and to the intermediate members 11.

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At spaced intervals along the peripheral member 10 I provide upwardly extending, load-supporting resilient elements 15, the lower ends of which are secured to the peripheral member 10 and the upper ends of which are secured to a border frame 16. As will be clear from Figs. 3 and 4, each of the resilient load-supported elements 15 is formed of wire repeatedly reversely bent into sinusoidal form and then curved into the generally semicircular shape indicated in Fig. 3. In the assembly, the elements 15 secured to the peripheral member 10 and border frame 16 are desirably disposed with their concave sides outwardly so that they lie within the border of the assembly.

In addition to the springs 15 extending between the peripheral member 10 and border frame 16, I provide a plurality of similar springs 15' located interiorly of the assembly and desirably arranged in transverse rows, as will be clear from Fig. 1. Desirably, the springs 15' in each row are oriented symmetrically with respect to the longitudinal center-line of the assembly—that is, elements 15' on one side of such center-line will be oriented oppositely to those on the other side. For example, the elements 15' shown in Fig. 2 as lying to the left of the center of the assembly have their concave faces directed to the right while those lying to the right of the assembly have the concave faces directed to the left. Preferably, the elements 15' of adjacent rows are arranged oppositely. Thus, while the elements 15' of the first row have their concave faces directed inwardly of the assembly, as shown in full lines in Fig. 2, the elements 15' of the next row of elements will have their concave faces directed outwardly of the assembly as indicated in dotted lines in Fig. 2.

In Figs. 5 and 6 I have indicated an arrangement which may be employed to secure the lower ends of the springs 15 to the peripheral member 10 of the base frame. As shown, such peripheral member is an angle iron having its two legs arranged respectively in vertical and horizontal planes, with the vertical leg extending downwardly from the inner edge of the horizontal leg. At points where springs 15 are to be attached to the peripheral member 10, the horizontal flange of such member is slotted, as indicated at 18, to receive an offset 19 formed on the end transverse stretch of the element 15. Such offset has an inner portion which is generally perpendicular to the last convolution of the element and an outer portion 19' which is generally parallel to such last convolution. In assembling the structure, the portion 19' is inserted

downwardly into the slot 18, as shown in full lines in Fig. 6, and the element 15 is then rotated through approximately 90°, or from the full-line to the dotted-line position, to bring the offset-portion 19' against the lower face and the end convolution of the element 15 against the upper face of the horizontal flange of the member 10.

To secure the upper end of each load-supporting element 15 to the border frame 16, the end transverse stretch of the element may be given a sinusoidal form, as indicated in Fig. 7, to provide portions 21 engaging the vertical flange of the border frame 16 and, between the portions 21, a curved portion 22 which partially surrounds a shouldered rivet 23 mounted in the horizontal flange of the border frame 16.

The lower ends of the inner elements 15' of each transverse row of such elements may be attached to the intermediate base-frame members 11 in the same manner as that employed in connecting the outer elements 15 to the peripheral member 10. To secure the upper ends of interior elements 15' together, I associate with each row thereof a flexible sheet-metal strip 25 which extends longitudinally of the row and which is interlaced with the last three transverse portions of each of the elements 15'. As will be clear from Figs. 8 and 9, the strip 25 passes above the extreme end transverse stretch of each element 15', beneath the next adjacent transverse stretch, and above the third transverse stretch. To locate each of the elements 15' in a definite position along the associated strip 25, such strip is offset downwardly to provide a groove or channel 26 in which the penultimate transverse stretch of the load-supporting element is closely received. If necessary to provide proper reception of the transverse stretch of the element in the groove 26, the strip 25 may be narrowed somewhat at each groove 26, as indicated at 27 in Fig. 9.

The ends of each strip 25 are resiliently connected to the border frame 16, as by means of helical tension springs 30, and the strips 25 are connected with each other and with the ends of the border frame 16 through additional tension springs 31. Preferably, the upper ends of elements 15' of each row are directly connected through tension springs 32 with the upper ends of elements 15' of adjacent rows or with the ends of the border frame 16 in such a way that the last curved portion of each element will be held resiliently seated against the associated strip 25. The extreme end of the wire constituting each of the elements 15' is disposed beneath and between the side edges of the associated strip 25, where it will be in a position such that cannot contact and damage a mattress supported on the spring.

In the modified arrangement shown in Fig. 10, the bent portions 19' of the offsets 19 are eliminated, and each of such offsets is disposed entirely

in a vertical plane and projects downwardly below the horizontal flanges of the peripheral and intermediate members 10 and 11. To secure the elements 15 and 15' in place, a wire 35 is run through the offsets 19 below such horizontal flanges. Such wire may in turn be secured in place by bending its ends around the offsets 19 on the outer elements 15.

It is to be understood that while I have illustrated my invention as embodied in a plain bed spring, it can also be used in box springs and in spring assemblies for other purposes.

I claim as my invention:

1. In a spring assembly, a base frame, a plurality of rows of load-supporting elements having lower ends secured to and upper ends spaced upwardly from said base frame, each of said elements being generally semicircular in form and comprising a sinusoidally bent wire having a plurality of generally parallel stretches extending transversely of the row in which the element is located, and a flexible strip extending along each row of elements at the upper ends thereof, said strip passing above the ultimate and antepenultimate stretches and below the penultimate stretch of each element.

2. The invention set forth in claim 1 with the addition that said strip is provided with downwardly offset portions forming seats which receive the penultimate stretches of the associated load-supporting elements.

3. The invention set forth in claim 1 with the addition of a border frame disposed in the plane of said strips, tension springs connecting adjacent strips, and tension springs connecting the ends of each strip with opposite sides of said border frame.

4. The invention set forth in claim 1 with the addition of a border frame disposed in the plane of said strips, and tension springs connecting the ends of each strip with opposite sides of said border frame.

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