Aug. 28, 1923. 1,465,996

H. O. REIDENBACH

SPRING STRUCTURE

Filed Aug. 14, 1922 2 Sheets-Sheet 1

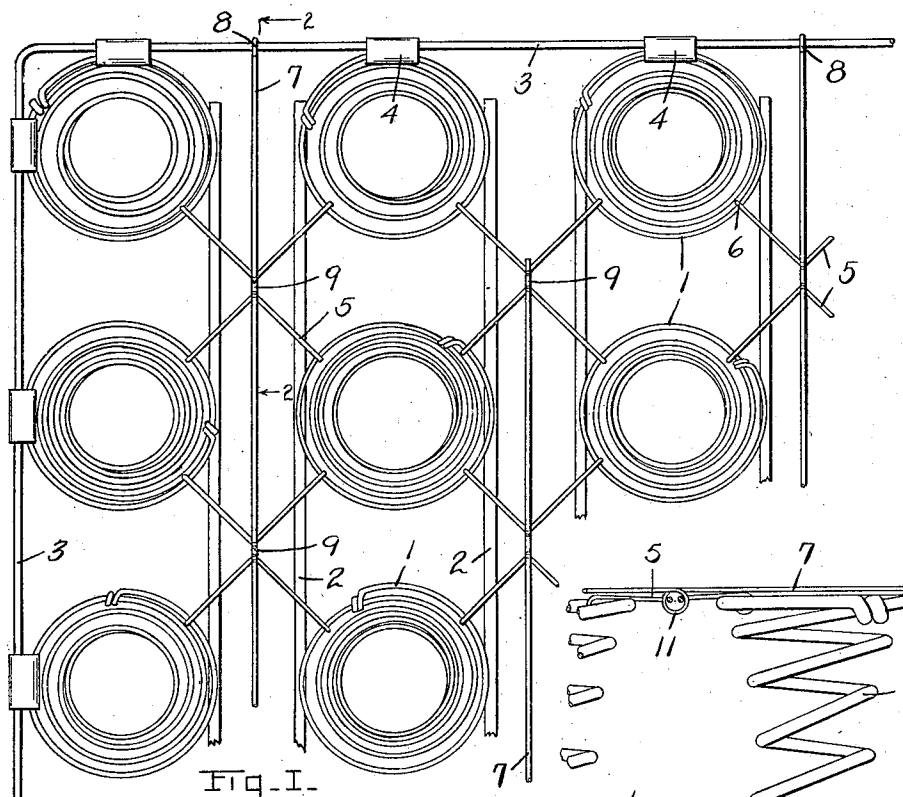


Fig. I.

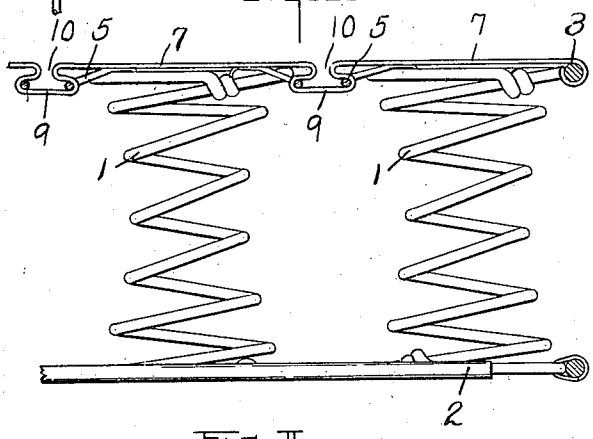


Fig. II.

Fig. III.

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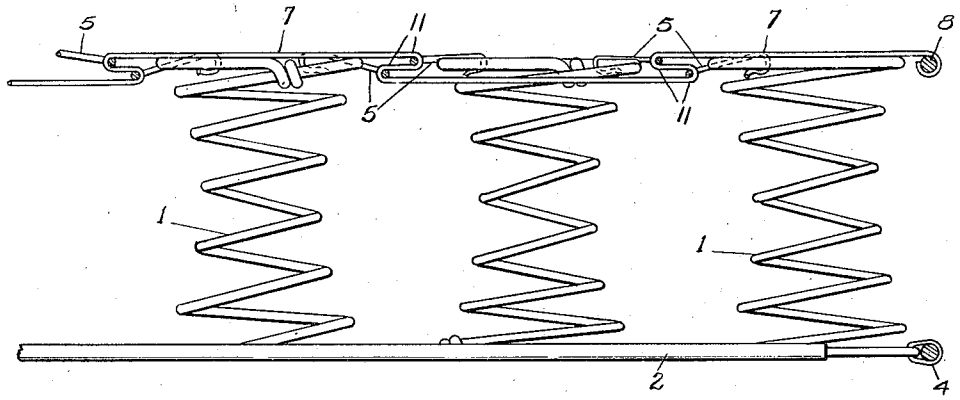


Fig. IV.

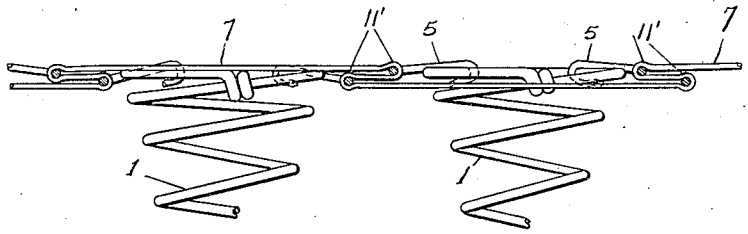


Fig. V.

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UNITED STATES PATENT OFFICE.

HERMAN O. REIDENBACH, OF DETROIT, MICHIGAN, ASSIGNOR TO L. A. YOUNG INDUSTRIES, INC., OF DETROIT, MICHIGAN.

SPRING STRUCTURE.

Application filed August 14, 1922. Serial No. 581,745.

To all whom it may concern:

Be it known that I, HERMAN O. REIDENBACH, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented certain new and useful Improvements in Spring Structures, of which the following is a specification.

This invention relates to improvements in spring structures.

The main objects of the invention are:

First, to provide in a spring structure such as cushion springs, bed springs and the like an improved means for tying or connecting the upper ends of the springs whereby they are effectively supported in upright position.

Second, to provide an improved means for connecting the ends of spring structures of the class described which not only effectively supports the springs, but constitutes an effective support for the upholstery, mattress or the like.

Further objects, and objects pertaining to details and economies of construction and operation will definitely appear from the detailed description to follow.

I accomplish the objects of my invention by the devices and means described in the following specification.

The invention is clearly defined and pointed out in the claims.

A structure which is a preferred embodiment of the invention is clearly illustrated in the accompanying drawing forming a part of this specification, in which:

Fig. I is a fragmentary plan view of a cushion structure embodying the features of my invention.

Fig. II is a detail vertical section on a line corresponding to line 2—2 of Fig. I.

Fig. III is a detail vertical section, corresponding to that of Fig. II, showing a modified form of my invention.

Fig. IV is a detail vertical section corresponding to that of Figs. II and III, showing another modification.

Fig. V is a detail section showing a slight modification of the embodiment shown in Fig. IV.

In the drawing similar numerals of reference refer to similar parts through all of the views.

Referring to the drawing, the body of supporting springs 1 are arranged in rows upon a suitable base indicated generally by the numeral 2. As the details of this base form no part of my present invention, I do not further describe the same herein.

The outer springs are connected to the border wire 3 by means of the clips 4. I provide V-shaped tie members 5 arranged in coacting pairs with their bights adjacent, the ends of these tie members being connected to adjacent springs at 6. Cross wires 7 are arranged between the rows of springs, these cross wires being connected at one end as at 8 to the border wire, alternate cross wires being connected on the opposite sides of the border frame as illustrated.

These cross wires 7 are provided with eyes 9, which in the embodiment illustrated in Figs. I and II, are formed by double return bends resulting in loop-like offsets having restricted openings 10 through which the bights of the coacting pairs of tie members may be engaged and disengaged, although when once engaged it is not ordinarily required that they should be disengaged. This form of eye greatly facilitates assembling.

In the modification shown in Fig. III the eyes 11 are formed by coils in the cross wires and in assembling it is necessary to manipulate the tie wires through these eyes. The supporting action, however, is the same as in the preferred embodiment.

In the embodiment shown in Fig. IV, the eyes 11 are formed by coils in the cross return bends, disposed one above the other. In Fig. V these return bends are closed forming the eyes 11′, which securely retains the tie members 5 in engagement therewith.

In addition to the providing of means for the attachment of the tie members 5 to the cross wires, these return or loop-like bends and also the coiled eyes 11 of Fig. III form spring members in the cross wires so that they yield and give under stresses to which they are subjected in use. With the loop-like offsets or bends as shown in Figs. I and II the downward springing cross wires and the yielding of the eyes thereof does not tend to open the eyes or cause the tie members to disengage as it rather tends to close the same.

The form or embodiment shown in Figs. III, IV and V very materially adds to the yielding quality of the cross wires without in any way weakening the same.

By thus forming and arranging the parts,

they may be very economically produced and rapidly assembled.

I have illustrated and described my improvements in embodiments which I have found very satisfactory. I have not attempted to illustrate or describe certain modifications which I contemplate as I believe the disclosure made will enable those skilled in the art to which my invention relates to embody or adapt the same as may be desired.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a spring structure, the combination of a border frame, a plurality of springs arranged in rows, V-shaped tie members disposed in coacting pairs with their ends connected to adjacent springs and their bights adjacent, and cross wires disposed between the rows of springs with one end connected to the border frame, and having loop-like offsets therein providing eyes with restricted openings permitting the engagement and disengagement of the bights of coacting pairs of tie members therewith.

2. In a spring structure, the combination of a plurality of springs, V-shaped tie members disposed in coacting pairs with their ends connected to adjacent springs and their bights adjacent, and cross wires disposed between the springs and having loop-like offsets therein providing eyes with restricted openings permitting the engagement and disengagement of the bights of said coacting pairs of tie members therewith.

3. In a spring structure the combination of a border frame, a plurality of springs arranged in rows, V-shaped tie members disposed in coacting pairs with their ends connected to adjacent springs and their bights adjacent, and cross wires disposed between the rows of springs with one end of each connected to the border frame, and having eyes therein with which the bights of the coacting pairs of tie members are engaged.

4. In a spring structure, the combination of a plurality of springs, V-shaped tie members disposed in coacting pairs with their ends connected to adjacent springs and their bights adjacent, and cross wires disposed between the rows of springs and having eyes therein with which the bights of the coacting pairs of tie members are engaged.

5. In a spring structure, the combination of a border frame, a plurality of springs, cross wires with return bends therein, and V-shaped tie members disposed with their bights engaging said return bends and their ends engaging adjacent springs.

6. In a spring structure, the combination of a border frame, a plurality of springs, disposed in rows, cross wires disposed between the rows of springs and having return bends therein and tie members engaging said return bends and adjacent springs.

7. In a spring structure, the combination of a plurality of springs, cross wires disposed between the springs and having return bends therein, and V-shaped tie members disposed with their bights engaging said bends and their ends engaging adjacent springs.

8. In a spring structure, the combination of a plurality of springs, cross wires having return bends therein, and V-shaped tie members engaging said bends and adjacent springs.

9. In a spring structure, the combination of a plurality of springs, cross wires disposed between the springs and having return bends therein the adjacent bends being disposed in opposite directions, and V-shaped tie members disposed in coacting pairs with their ends connected to adjacent springs and their bights engaged with adjacent bends of said cross wires.

10. In a spring structure, the combination of a plurality of springs, disposed in rows, cross wires disposed between said rows of springs and having loops therein, adjacent loops being disposed in opposite directions, and tie members engaging with said loops and adjacent springs.

11. In a spring structure, the combination of a plurality of springs, cross wires disposed between the springs and having loops therein, and tie members disposed in opposed relations and connected to adjacent springs and engaging said loops.

12. In a spring structure, the combination of a plurality of springs, cross wires disposed between the springs and having loops therein constituting spring members in the cross wires, and tie members disposed in opposed relation and connected to adjacent springs and engaging said loops.

In witness whereof, I have hereunto set my hand and seal.

HERMAN O. REIDENBACH. [L. S.]