Jan. 9, 1945. C. J. ELDER 2,366,646

BED SPRING

Filed Jan. 8, 1943

Fig. 1.

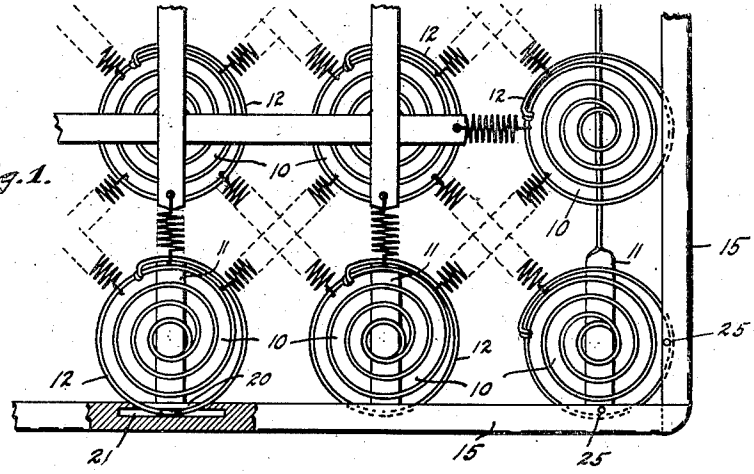


Fig. 2.

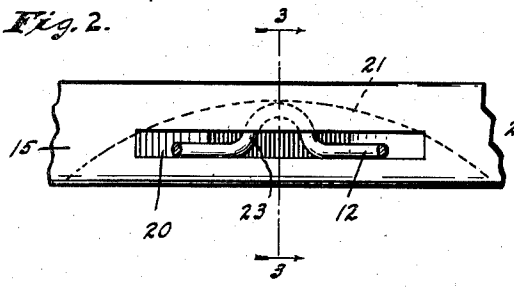


Fig. 3.

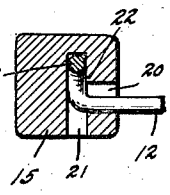


Fig. 4.

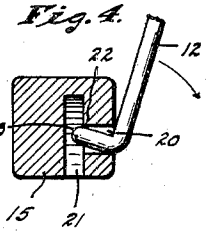


Fig. 5.

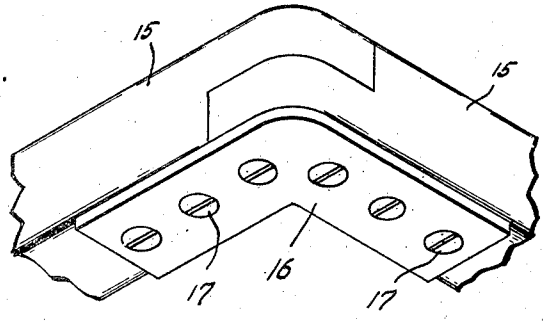
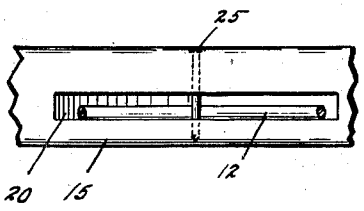


Fig. 6.



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2,366,846

BEDSPRING

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Application January 8, 1943, Serial No. 471,650

9 Claims. (Cl. 5—260)

My invention relates to bed springs or other spring assemblies which embody a plurality of rows of helically coiled compression springs. In such assemblies, it is customary to provide a border frame coplanar with the end turns of the compression springs and secured to the end turns of the compression springs at the periphery of the assembly.

It is the primary object of my invention to provide a simple and economical expedient for securing the end turns of the peripheral compression springs to the border frame. More specifically, it is my object to attach the end turns of the compression springs to the border frame in a manner which will require no additional elements. Another object of my invention is to provide a means of attachment between the border frame and the end turns of the compression springs which is especially suitable when the border frame is made of wood.

In carrying out my invention, the inner face of the border frame is provided for each peripheral compression spring with a groove or slot adapted to receive a portion of the end turn of such spring. That portion of each spring turn which is received in the associated groove or slot is provided with an upwardly extending offset adapted to engage an outwardly presented shoulder or surface in the border frame so as to prevent removal of the spring from the groove or slot by rectilinear movement of the spring in the plane of the slot.

The accompanying drawing illustrates my invention:

Fig. 1 is a fragmental plan view showing one corner of a bed spring or similar spring-assembly; Fig. 2 is a fragmental elevation of the inner face of one side of the border frame showing a portion of an end turn of a compression spring associated therewith; Fig. 3 is a section on the line 3—3 of Fig. 2, showing the spring-turn located in position relative to the border frame; Fig. 4 is a view similar to Fig. 3 showing a portion of the compression spring in process of being inserted into the slot or groove in the border frame; Fig. 5 is an isometric view showing the construction at a corner of a wooden border frame; and Fig. 6 is a view similar to Fig. 2 illustrating a means by which compression springs at the corners of the assembly may be secured to the border frame.

The spring assembly illustrated in Fig. 1 comprises a plurality of rows of helically coiled compression springs 10 attached at their lower ends to and supported from cross members 11 of a base frame. Springs used in assemblies of this kind commonly have a generally frusto-conical form, the smaller ends of the springs being secured to the base frame while the larger ends are uppermost; and such an arrangement is illustrated in the drawing. The upper end turns 12 of the several compression springs 10 are all substantially coplanar and surrounded by a border frame to which the upper end turns of the peripheral springs 10 are connected.

The border frame illustrated in the drawing is one made of strips of wood 15 substantially square in cross-section. These strips extend along the sides and across the ends of the assembly, and strips meeting at the corner of the frame are secured together, conveniently in the manner illustrated in Fig. 5. As there shown, the joint between meeting strips is a lap joint reinforced by a metal plate 16 secured to the two strips 15 as by means of screws 17.

Adjacent each of the peripheral springs 10, each of the strips 15 is provided in its inner face with a slot or groove 20 adapted to receive the end turn 12 of the adjacent spring. Desirably, the slot or groove 20 is one formed by a saw or other circular cutter having a diameter approximately equal to the outer diameter of the end spring-turn 12, as will be clear from Fig. 1. The width of the groove 20 may be, and desirably is, somewhat greater than the thickness of the wire from which the springs 10 are formed.

At each of the grooves 20, the lower surface of each strip 15 is provided with a groove 21 which extends upwardly into the material of the strip 15 to a point somewhat above the upper face of the groove 20, as will be clear from Figs. 2 to 4, to provide immediately above the groove 20 an outwardly presented shoulder 22.

At its outermost point, each of the pring-turns 12 is formed with an upwardly projecting offset 23 adapted to be received in the uppermost portion of the groove 21 behind the shoulder 22 formed by the inner face of the groove 21. A spring and border frame are shown in assembled condition in Figs. 2 and 3.

The manner in which the peripheral compression springs 10 are brought into association with the border frame is illustrated in Fig. 4. As will be clear from that figure, each spring is tilted outwardly from the position it normally occupies in the assembly into an approximately horizontal position, and the offset 23 on the end turn 12 of the spring is inserted into the slot 20. Because this slot has a width greater than the thickness of the wire forming the spring 10, it is possible, after inserting the offset 23 into the slot 20, to rotate the spring downwardly to cause

the offset 23 to enter the upper portion of the groove 21. Desirably, the grooves 20 and 21 are so proportioned that at least a slight distortion of the spring is necessary in effecting the insertion of the offset 23 into the groove 21, as thereby lost-motion between the spring and border frame may be eliminated and a more secure fastening obtained.

In the case of the springs at the corners of the assembly, it is customary to secure each spring to both sides of the border frame meeting at that corner. I therefore provide grooves 20 for the reception of the end turn 12 of each corner spring. It will be obvious, however, that it would be impossible to employ the expedient illustrated in Figs. 2 to 4 in securing the end turn 12 of each corner spring to the two side members 15 associated with it; for the insertion of the end turn 12 into the groove 20 in one strip 15 would prevent that rotation of the spring which is necessary to secure its insertion into the groove 20 in the other strip. Accordingly, where the border frame is assembled prior to being brought into association with the springs 10, I eliminate the grooves 21 at the corners of the border frame and also eliminate the offsets 23 from the upper end turns of the corner springs. As a result, the end turn of each corner spring can readily be inserted into the grooves 20 in both members 15 and held in place therein by a pin or nail 25 driven downwardly through the strip 15.

The expedient illustrated and described above for holding the end turns of the peripheral springs 10 in association with the border frame is especially adaptable in situations where the border frame is made of wood. Any load applied to the spring assembly tends to rotate the end turns of each peripheral spring relative to the border frame in a direction such as will bring the offset 23 more firmly into contact with the shoulder 22; and as a result, loading of the spring assembly has no tendency to cause separation of the end turns of the peripheral springs from the border frame.

As will be clear from Fig. 1, when the assembly is completed with the offset 23 of each spring engaging the shoulder 22 the end turn 12 will engage the ends of the slot 20. This makes for a more stable construction, in that engagement of the end turn with the ends of the slot 20 opposes any tendency of the end turn to rotate relatively to the border frame about a vertical axis through the offset 23.

I claim as my invention:

1. In a spring assembly of the type described, a group of compression springs arranged in a plurality of parallel rows and having substantially coplanar upper end turns, a generally rectangular border frame surrounding the upper end turns of said compression springs and coplanar therewith, said border frame being provided in the inner faces of its sides and adjacent each of the springs at the periphery of said group with an inwardly opening slot receiving a segment of the upper end turn of such spring, said border frame having immediately above each of said slots an outwardly presented shoulder spaced outwardly from the inner face of the border frame, the spring end-turn associated with each of said slots being provided with means engaging said shoulder to prevent withdrawal of the end-turn from the slot.

2. The invention set forth in claim 1 with the addition that said means comprises an upwardly projecting offset on the spring end-turn.

3. The invention set forth in claim 1 with the addition that the sides of said border frame are of rectangular cross section, each of said slots extending only partially through the frame-side and being of arcuate form conforming approximately to the curvature of the associated spring end-turns, the shoulder associated with each slot constituting a portion of the inner face of a second slot extending upwardly from the lower face of the frame-side and crossing the plane of the first named slot.

4. The invention set forth in claim 1 with the addition that the sides of said border frame are of rectangular cross section, each of said slots extending only partially through the frame-side, the shoulder associated with each slot constituting a portion of the inner face of a second slot extending upwardly from the lower face of the frame-side and crossing the plane of the first named slot.

5. In a spring assembly, a group of parallel-axis compression springs, a border frame surrounding said springs, the springs at the periphery of said group having end turns coplanar with and contiguous to said border frame, said frame being provided adjacent the end turn of each peripheral spring with an inwardly presented slot receiving a segment of such end turn, such segment having intermediate its length an offset projecting from the plane of the end turn in a direction opposite to that of the load to be imposed on the compression springs, said border frame having at each of said slots an outwardly presented shoulder engaging said offset to prevent withdrawal of the end turns from the slot.

6. In a spring assembly, a group of parallel-axis compression springs, a border frame surrounding said springs, the springs at the periphery of said group having end turns coplanar with and contiguous to said border frame, said frame being provided adjacent the end turn of each peripheral spring with an inwardly presented slot receiving a segment of such end turn, such segment having intermediate its length an offset projecting from the plane of the end turn, said border frame having at each of said slots an outwardly presented shoulder engaging said offset to prevent withdrawal of the end turns from the slot.

7. The invention set forth in claim 6 with the addition that the segment of the end turn received in said slot engages the ends of such slot.

8. In a spring assembly of the type described, a group of compression springs arranged in a plurality of parallel rows and having substantially coplanar upper end turns, a generally rectangular border frame surrounding the upper end turns of said compression springs and coplanar therewith, said border frame being provided in the inner faces of its sides and adjacent each of the springs at the periphery of said group with an inwardly opening slot receiving a segment of the upper end turn of such spring, said border frame having immediately adjacent each of said slots an outwardly presented shoulder spaced outwardly from the inner face of the border frame, the spring end-turn associated with each of said slots being provided with means engaging said shoulder to prevent withdrawal of the end-turn from the slot.

9. The invention set forth in claim 8 with the addition that the segment of the end turn received in said slot engages the ends of such slot.

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