Aug. 25, 1936. H. B. SKLAR 2,052,040

SPRING ASSEMBLY WITH FLAT GROOVED BORDER WIRE

Filed May 17, 1934

FIG. 1.

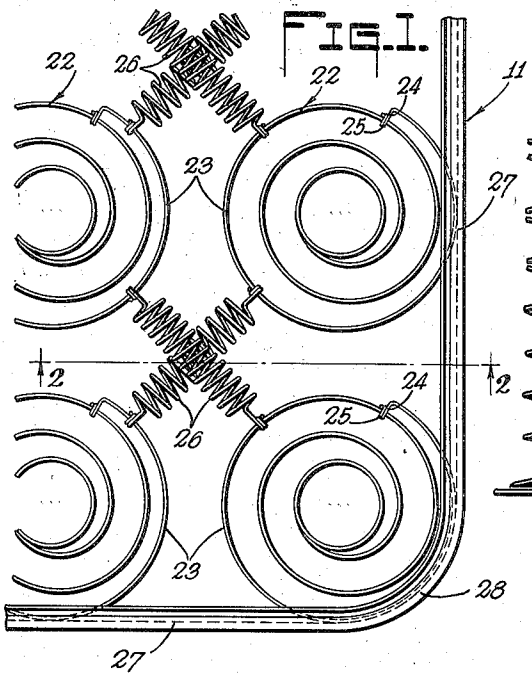


FIG. 2.

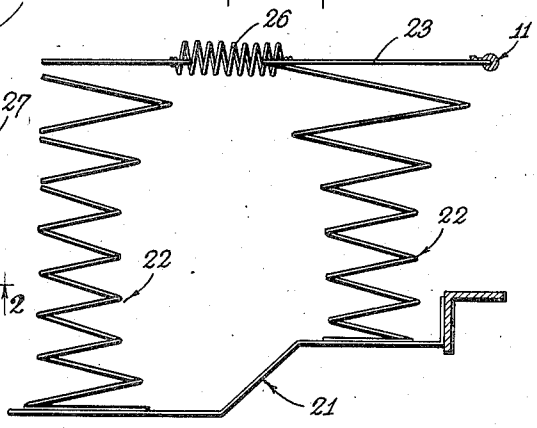


FIG. 3.

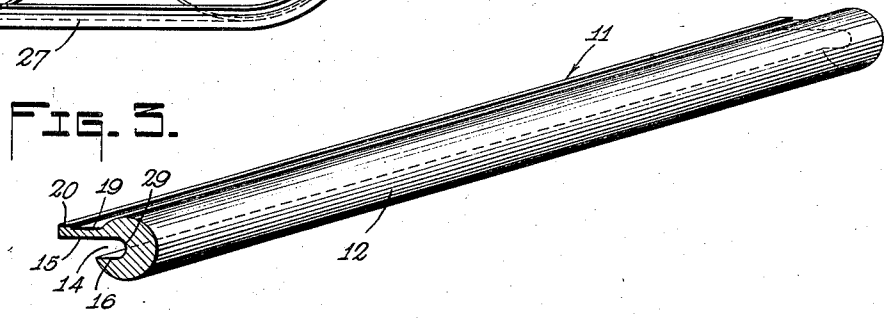


FIG. 4.

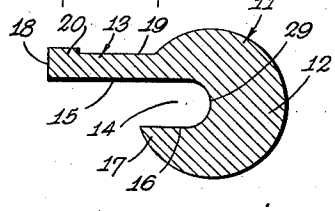


FIG. 5.

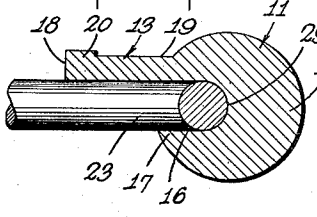
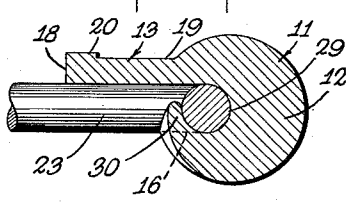


FIG. 6.



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SPRING ASSEMBLY WITH FLAT GROOVED BORDER WIRE

Harry B. Sklar, Los Angeles, Calif.

Application May 17, 1934, Serial No. 726,074

6 Claims. (Cl. 5—260)

My invention relates to a spring assembly in which a series of coiled springs are connected to a border wire and thus the tops of the outside springs are bound together by this border wire.

My present invention may be considered as a further development of a type of spring and border wire shown in my patent applications as follows: Serial Number 675,896, filed June 15, 1933, Crimping machine for bed springs or the like, and Serial Number 711,125, filed February 14, 1934, Bed springs.

An object and feature of my present invention is forming the border wire with a longitudinal groove, such groove being positioned horizontally to engage the upper turn or coil of a coil spring below the upper structure of the border wire which is substantially flat.

A further object of my invention is forming the border wire with a flat or horizontally extending top section so that this will fit on the top of the upper turn of the coiled springs and thus, in the finished assembly of the assembled spring, give a comparatively wide border wire with its flat upper surface extending over a larger portion of the upper turn of the coiled spring than would a border wire circular in cross section.

Another feature of my invention is securing the grooved flat topped border wire to the coiled spring by crimping the lower inside portion of the grooved wire upwardly in order to lock the upper turn of the coiled spring in the groove of the border wire. By this construction, with my invention, a portion of the border wire may be made substantially circular in cross section and having a horizontal groove to be made continuous with the wire, the particular structure of the wire extending horizontally so that the upper surface extends beyond the groove, that is, beyond the main portion of the border wire towards the center of the built-up spring assembly. Thus, when the circular section of the coiled spring engages in the groove and the lower lip of the border wire on the groove is bent upwardly in the form of a crimp, the coiled spring is firmly locked in the border wire. The crimped-up lip forms a locking member engaging the lower portion of the coil of the spring and the horizontally extending portion of the border wire rests on the upper surface of the coil and spring.

With my construction, I can secure substantially all of the benefits of a border wire formed of an angle without its detrimental features, such as the necessity to pierce the surface with rivet holes, and rivet the coils to the angle border. The horizontally extending section also forms a cover and obscures the groove from view when a person looks down on the spring assembly, and thus, the manner in which the border wire is secured to the coil spring is not readily visible.

My invention is illustrated in connection with the accompanying drawing, in which:

Fig. 1 is a plan of a section of a spring assembly such as used in a bed spring illustrating the use of my flat grooved border wire.

Fig. 2 is a vertical section on the line 2—2 of Fig. 1 in the direction of the arrows.

Fig. 3 is a perspective view of a section of my improved border wire.

Fig. 4 is a transverse section of the border wire on an enlarged scale and illustrating the horizontal groove.

Fig. 5 is a section similar to Fig. 4 illustrating in addition the upper turn of a coiled spring inserted in the groove.

Fig. 6 is a section similar to Fig. 5 with the lower lip of the border wire crimped upwardly to attach the border wire to the coiled spring.

In the illustration, the border wire designated by the numeral 11 has a cylindrical section 12 and a horizontal extension 13. A horizontal groove 14 is formed in the border wire thus providing a flat under surface 15 on the under side of the flat horizontal extension 13. The groove also provides an opposite horizontal surface 16 on the upper side of the lower lip portion 17 of the cylindrical section. The border wire is illustrated as having a vertical edge 18 extending longitudinally of the extension and a slight depression 19 is formed in the upper flat surface of the border wire leaving raised bead 20 adjacent the edge 18.

The spring assembly is built up by providing a lower structure 21 which may be of any desired type such as those now in use and resting on this supporting structure there are a series of coiled springs 22. These springs are shown as of the compound spiral and helical coiling and each have an upper turn 23 of the coils. The free end 24 of the upper turn is illustrated as secured to the adjacent part of the coiled spring by a twist 25 or any other suitable type of fastening. The individual coiled springs are illustrated as being attached one to the other by intersecting coiled tension springs 26, this being an old and standard construction.

In my construction, the horizontal upper turns 23 of the coiled springs adjacent the border wire are fitted in the groove 14. This is illustrated at the straight sections 27 of the border wire and at the corner bend 28. The wire of

the border springs is preferably cylindrical in cross section and is of such a diameter that it fits snugly in the groove 14. The base 29 of this grove has a curvature to conform to the cross section of the upper turn of the wire of the border springs. The flat surface 15 of the border wire fits on and thus engages a portion of the upper turn of the coiled spring 22.

In order to grip the upper turn of the coiled springs the lower lip of the border wire is bent or crimped upwardly as indicated at 30, Fig. 6. This is preferably done by a suitable crimping machine which may embody a slight modification of the crimping machine disclosed in my patent application Serial No. 675,986 above mentioned, but in this case, only a lower crimping jaw is provided. Manifestly, where the spring on the corner is engaged in the corner turn 28 of the border wire, the crimp may be much longer than where the coiled spring engages a straight section of the border wire or else a number of short individual crimps may be used to cause the lower lip to engage the upper turn of a coiled spring at the corner of the border wire. This form of attachment of the border wire to the coiled spring preferably grips the spring so that it cannot twist in the border wire and the flat under surface 15 of the border wire engages the upper edge of a portion of each coiled spring after the crimp is completed, thus spreading the contact between the border wire and the coiled spring over a considerable area.

It is not necessary to have the groove 19 or the bead 20, but the formation of this makes a pleasing contrast in the contour of the border wire and also allows painting or coloring this border wire in an attractive manner. For instance, the groove may be painted one color and the same color used for the cylindrical section of the border wire or a different color may be used for this latter section if desired, and the bead 20 may, at its upper surface, be painted a different color from that of the groove 19. With this construction the groove construction or wire is practically obscured when a person looks at the the top of a finished bed springs, and no means is thus visible showing the manner of attachment of the colored springs and the border wire. The feature of the bead 20 and the groove 19 when a mattress is supported on the spring is that the edge portion of the mattress becomes depressed in the groove portion 19, the bead thus pressing upwardly into the bottom of the mattress and this, with the upwardly curved portion of the cylindrical section of the border wire, lessens the chances of the mattress slipping on the assembled wire bed spring.

A characteristic feature of the groove formed in my border wire is that the main body of the border wire is cylindrical and thus having a circular cross section with the lateral extension in one side. The groove is continuous. The axial center of the groove is on a diametrical line, which, when the wire is assembled, is horizontal. The base of the groove is a semi-cylinder with the deepest part of its periphery passing through the axial center of the circular section of the border wire. The semi-cylinder of the groove is formed to have the circular shape of the loop of the coil spring and thus the flat upper and lower surfaces of the groove are spaced apart the diameter of the loop.

Various changes may be made in the details of construction without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. A spring assembly having a border wire with a section substantially cylindrical in cross section and having a horizontal groove therein, a lateral extension above the groove, the under side of the extension being in the same plane as the upper side of the groove, the lower side of the groove being parallel thereto and having a lower lip, a coiled spring having a loop fitted in the said groove and bearing against the flat surface of the extension, the lip of the border wire being bent upwardly to engage the loop of the spring wire.

2. In a spring assembly, a border wire with a portion thereof having a cross section substantially cylindrical and having a continuous horizontal groove, the center of the groove being on a horizontal diameter of said cylindrical portion, such groove having flat upper and lower surfaces and a curved base, the border wire also having a lateral extension with the under surface in the same plane as the upper surface of the groove, the upper surface of the extension being below the upper peripheral edge of the cylindrical portion of the border wire.

3. In a spring assembly as claimed in claim 2, a spring having a loop with one portion of the loop extending into the groove, a portion of said loop bearing against a flat under surface of the under side of the groove and the under side of the said extension, the lower portion of the groove having a lip and said lip being crimped upwardly to engage the loop.

4. In a spring assembly, a border wire having a portion thereof forming part of a cylinder, one side of the border wire having a continuous groove and the axial line of the groove being on a diametric plane of the cylindrical portion of the border wire, the base of the groove being a semi-cylinder with the deepest part of the groove passing through the center of the circular section or wire, the groove having parallel opposite surfaces extending from the semi-cylindrical section of the groove to the periphery of the border wire, the border wire having a lateral extension with an under surface in the same plane as one of the surfaces of the groove, the opposite surface of the groove having a lip formed by one of the flat surfaces of the groove and a portion of the cylindrical section of the border wire, said lip being bent inwardly to form a continuation of the semi-cylindrical portion of the groove, the loop of a spring fitted in the groove bearing against the semi-cylindrical section of the groove and the extension formed by the inwardly bent lip.

5. In a spring assembly, a border wire having a continuous groove, a loop of a spring fitted in said groove, the base of the groove conforming with the curvature of the loop in cross section and the width of the groove being equal to the diameter of the wire comprising the loop, the border wire having a lip of one side of the groove crimped inwardly to engage a portion of the loop opposite the base of the groove to thereby attach the border wire and the loop, the border wire having a lateral extension, the under surface of the said extension being in the same plane as the upper side of the groove and the upper peripheral surface of the loop engaging the flat under surface of the lateral extension.

6. In a spring assembly, a border wire having a main portion substantially circular in cross

section and having a continuous longitudinal groove extending in a horizontal plane with the base of the groove forming part of a cylinder at substantially the center of the wire, the wire having a single lip on the lower side of the groove, a loop of a coiled spring having a peripheral portion thereof inserted in the groove and the single lip crimped upwardly as regards the plane of the groove forming a continuation of the part cylinder to attach the border wire and the loop, the border wire having a lateral extension with an under surface in the same plane as the upper surface of the groove, the said under surface engaging the upper surface of the loop beyond the portion of the loop located within the said groove.

HARRY B. SKLAR.