SPIRAL SPRING CONSTRUCTION

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This invention relates to spiral springs, and particularly to such springs of the type that are ordinarily used in beds, springs and mattresses and various kinds of upholstered furniture.

Springs of the aforesaid character have reached an extremely high state of commercial development, and are produced in large numbers in substantially uniform sizes and constructions. Basically, these springs embody a multiple coil spiral arrangement, with the coils varying in diameter from the center of the spring toward opposite ends thereof so that the central coil or coils of the springs are the smallest and the end coils are the largest, and the free end of the spring wire that forms the end or terminal coil at each end of the spring is coiled about an intermediate anchoring portion of the spring wire to afford a knot, which theoretically is intended to maintain the end coil at a constant size or diameter. This coiled knot is relatively tight upon the anchoring portion of the wire, and this anchoring portion, in many instances, has a lateral offset formed thereto in cooperation with the coiled knot in preventing undesired endwise slipping of the knot along the anchoring portion when the spring is subjected to load. The attainment of a fixed location of the knot on the anchoring portion of the spring wire has been found to be extremely difficult, and even where an offset arrangement has been formed on the anchoring portion, it has been found that due to machine wear, or variation of the adjustments in the spring forming machine, the coiled knot, in many instances, has a tendency to slip along the anchoring portion of the spring wire, thus to cause the diameter of the end coil of the spring to change in an undesired manner.

In view of the foregoing, it is the primary object of the present invention to enable the position of the knot in such a spring to be permanently fixed with relation to the anchoring portion of the spring, and a related object is to enable this to be accomplished in a simple and inexpensive manner that may readily be coordinated with the usual method of spring manufacture.

More specifically, it is an object of the present invention to permanently unite the knots in such springs with the anchoring portion of the springs by welding, and to accomplish a mechanical interlock as an incident to the performance of the welding operation.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, shows a preferred embodiment of the present invention and the principles thereof and what I now consider to be the best mode in which I have contemplated applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.
stood that this is capable of variation and modification, and I therefore do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. A multiple coil spiral spring formed from spring wire to afford a plurality of coils terminating in end coils having free ends, such free ends being wound about anchoring portions of the spring wire to afford knots for determining and maintaining the diameter of the end coils, said knots being fixed to said anchoring portions by spot welding to afford mechanically interlocking flat faces between the knots and said anchoring portions.

2. A multiple coil spiral spring formed from spring wire of round cross section to afford a plurality of coils terminating in end coils having free ends, such free ends being wound about anchoring portions of the spring wire to afford knots for determining and maintaining the diameter of the end coils, said knots being fixed to said anchoring portions by spot welding to form flat engaged and welded surfaces on the round wire of said knots and said anchoring portions.

3. A spring for beds, upholstered furniture and like uses comprising a continuous wire wound spirally in opposite directions around a common axis and from a common vertex to form a double cone spring, the opposite end portions of the wire each being extensions of the opposite spirals that constitute the bases of the respective cones, and the ends of the wire at such extensions each being wrapped about a portion of the spiral adjacent thereto and then spot welded to the portion of such adjacent spiral to afford mechanically interlocking flat faces between such ends and portions of the spiral allocated thereto.

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