Both the inner and outer circumferential surfaces of a coil spring are peened by passing sequential segments of the spring around offset pulleys mounted within a peening cabinet. As the spring is pulled around one of the pulleys, the coils fan out from the pulley to permit the peening media to impact portions of the inner and outer circumferential surfaces of the spring, and as the spring is pulled around the other pulley, the portions of the surfaces not peened as the segment traveled around the first pulley will be peened.
some of the peening media penetrates into the interior of the spring through the gaps 48, a section of the inner circumferential surface of the spring 34 will also be peened. The section of the outer circumferential surface 44 peened in this manner will be a section defined by the arc 46 of the outer circumferential surface 42, plus a portion of the inner circumferential surface 44 adjacent the arc 46. Since the section of the outer circumferential surface 42 of the coils defined by the arc 46 remain either engaged with another (or are separated by only a very small distance), the outer circumferential surface 44 of the pulley 16 is protected from impact by the peening media, thus increasing the life of the pulley 16. As the spring 34 travels through the peening chamber 12, sequential portions of the spring 34 are passed over the pulley 16. The spring 34 may be pulled through the peening cabinet 12, but the spring 34 may also be forced through the peening cabinet 12 by powered rotation of the pulleys 16, 18.

As the spring is pulled through the cabinet 12, the segment of the spring 34 peened by the media discharged from the nozzle 20 as it travels around the pulley 16 subsequently travels over the pulley 18. As this occurs, the portion of the outer circumferential surface 42 opposite the section defined by the arc 46 will engage the pulley 18. Accordingly, section 46 that engaged the pulley 16 will now be extended to create gaps between the coils 40. In this way, the portion of the outer circumferential surface 42 of the spring 34 that was not peened as it traveled around the pulley 16 will be peened as it travels around the pulley 18; similarly, the portion of the inner circumferential surface 44 of the spring 34 that was shielded from direct impact of the media (although it may have received indirect impacts of the media) will be impacted by the media. Accordingly, as the spring 34 travels across the pulleys 16 and 18, the inner and outer surfaces of the spring 34 will be peened. Springs of indeterminate length may accordingly be peened, as the coils 40 of sequential sections of the spring 34 are spread to permit peening of the inner circumferential surface 44 of the spring 34.

What is claimed is:

1. Method of shot peening a coil spring having coils with an inner diameter and an outer diameter, said coils normally being sufficiently close to one another when the spring is relaxed that an inner surface of the spring defined by the inner diameter of said coils is substantially closed off from an outer surface of the spring defined by the outer diameter of said coils, said method including the steps of wrapping of a portion of the spring around a pair of pulleys rotatably mounted in a treatment chamber and offset from one another, said spring including an internal portion within the treatment chamber and external portions entering and exiting said chamber, said spring being passed through said chamber by pulling on the portion exiting the chamber, a first circumferentially extending section of said coils being passed across one of said pulleys and a second circumferentially extending section of said coils radially offset from said first section being fanned out from said first section to thereby create openings between coils of said spring exposing said first section to shot peening, and said second circumferentially extending section engaging said other pulley as the spring is passed across said other pulley and said first section being fanned out from said second section to expose said second section to shot peening as the spring passes over said other pulley, directing said shot peening media through a first nozzle mounted in said chamber adjacent said one pulley and offset from said openings created as the spring passes across said one pulley to the outer surface to effect peening of the outer surface as the spring passes across said one pulley, and permitting a portion of said media to pass through said openings to thereby effect peening of at least a portion of said inner surface.

3. Method of shot peening a coil spring having coils with an inner diameter and an outer diameter, said coils normally being sufficiently close to one another when the spring is relaxed that an inner surface of the spring defined by the inner diameter of said coils is substantially closed off from an outer surface of the spring defined by the outer diameter of said coils, said method including the steps of wrapping of a portion of the spring around a pair of pulleys offset from one another, a first circumferentially extending section of said coils being passed across one of said pulleys engaging said one pulley and a second circumferentially extending section of said coils radially offset from said first section engaging said other pulley as the spring is passed across said other pulley and thereby exposing the inner surface to shot peening media applied externally of said spring as the spring travels across said pulleys, directing said shot peening media to the outer surface to effect peening of the outer surface as the spring passes across each pulley, and permitting a portion of said media to pass through said openings to thereby effect peening of at least a portion of said inner surface, wherein the coils of said second section are maintained sufficiently close to one another when the first section is fanned out that shot peening media is substantially prevented from passing through the second section, and the coils of said first section are maintained sufficiently close to one another when the second section is fanned out that shot peening media is substantially prevented from passing through the first section.
It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

Col. 3, Claim 1, line 8, following the word “chamber” add -- and --.

Col. 4, Claim 2, line 32, following the word “adjacent”, delete “:”.

Col. 4, Claim 3, line 6, following the word “spring”, delete “:”.

Signed and Sealed this
Eighteenth Day of October, 2011

David J. Kappos
Director of the United States Patent and Trademark Office