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2,138,787

METHOD OF MAKING RESILIENT METALLIC BUNCHES

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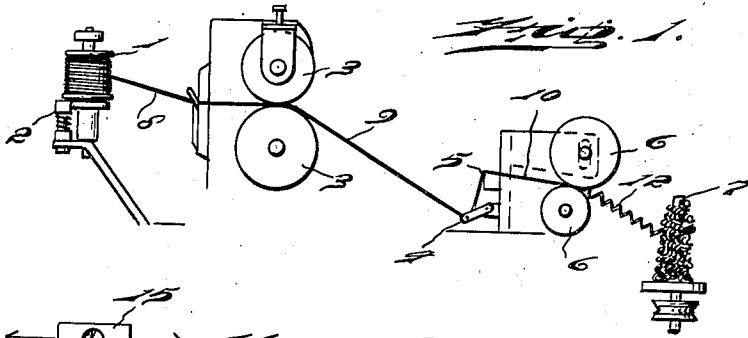
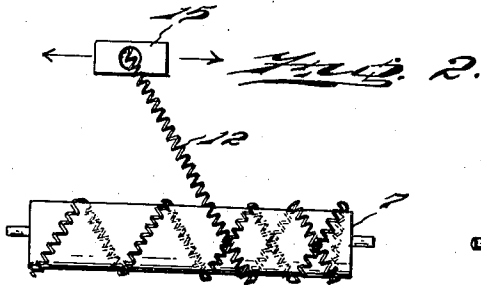
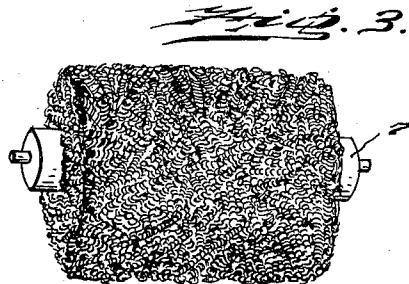


Fig. 4.

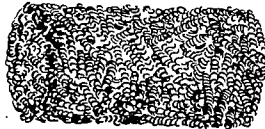


Fig. 5.

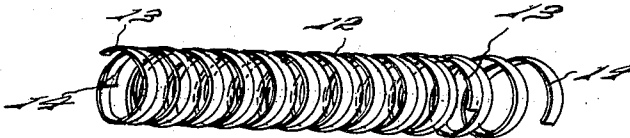


Fig. 6.



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METHOD OF MAKING RESILIENT METALLIC BUNCHES

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2 Claims. (Cl. 140—71)

The object of our present invention is to devise a novel method of making a flexible and resilient metallic bunch from a coreless metallic strand having an inherent tendency to form a helical coil, and to devise a novel flexible and resilient metallic bunch which will maintain its bunch formation without necessitating the use of one or more tying members, the bunch formation being maintained by the interlocking of coils of juxtaposed strands.

With the above and other objects in view as will hereinafter more clearly appear, our invention comprehends a novel method of making a flexible and resilient metallic bunch.

It further comprehends a novel method of making a metallic bunch wherein a coreless metallic strand which has had imparted to it an inherent tendency to form a helical coil is wound around a core under sufficient tension to separate successive coils of the strand from each other so that the coils of one turn around the core will fit in between the spaced coils of other turns around the core.

The wound strand may be removed from the core and the turns under tension contract so that successive coils of each turn will spring together and hold in interlocking relation the coils of other turns that may be between them.

Other novel steps of the method will herein-
after clearly appear in the detailed description and the appended claims.

For the purpose of illustrating the invention, we have shown in the accompanying drawing a typical embodiment of it; but it is to be understood that the various instrumentalities employed in carrying out our method may vary widely in practice, and our invention is not limited to the exact arrangement and organization of these instrumentalities as herein set forth.

Figure 1 is a diagrammatic view, showing one manner of carrying out in practice our novel method.

Figure 2 is a detailed view on a much enlarged scale, showing the strand as stretched and being wound under tension around a core.

Figure 3 shows in side elevation the strand on the core.

Figure 4 shows in side elevation a flexible and resilient metallic bunch, after removal from the core on which it was wound.

Figure 5 is a perspective view of two strand portions, on a much enlarged scale, showing more particularly the manner in which the coils interlock.

Figure 6 is a plan view of the coiled strand with successive coils normally in contact.

Similar numerals of reference indicate corresponding parts.

Referring to the drawing:—

In Figure 1, we have illustrated diagrammatically one manner of making the bunch. The metallic strand may have any desired contour in cross section.

The strand preferably consists of a metallic wire which has been subjected to a flattening operation and subsequently to a coiling operation.

As illustrated, the strand of wire passes from the spool 1 having a tension device 2, between flattening rolls 3.

If the wire has already been flattened, the upper roll or both rolls may be removed.

The strand passes under tension from the flattening rolls, or from the spool in case the flattening rolls are not employed, around a rod 4 and over a curling edge 5 to the feed rolls 6.

The operation thus far is similar to that disclosed in the Sedgley Reissue Patent 18,576 of August 23, 1932.

One side of the strand is stretched as it passes over the curling edge so that if the strand passes freely from the feed rolls, the tension on the strand, caused by the action of the feed rolls, would be released and the strand would assume the form of a continuous helical coil with successive coils, closely adjacent each other.

In accordance with this invention, the tension of the strand is not wholly released, and the strand is wound under tension around a revolving core 7 with successive coils spaced apart.

The coils of one turn around the core will fit in between the spaced coils of adjacent turns around the core as will be clearly understood from Figures 2 and 5.

When the wound strand is removed from the core the turns under tension will contract so that successive coils of each turn will spring together and hold in interlocking relation the coils of other turns that may be between them.

The bunch thus formed can be readily grasped in the hand and used as an abrading, cleaning or polishing device, or it may be secured in any desired manner to a handle.

In order to bring out more clearly the manner in which the coils of adjacent turns interlock, I have shown the strand on a greatly enlarged scale in Figures 2, 5 and 6. 8 designates the strand prior to flattening. 9 designates the flattened strand. 10 designates the coiled strand under tension, and the coiled strand is shown at

11, Figure 6, as it would appear if the tension was released with successive coils which are normally in contact close together. 12 designates a stretched strand as it is being fed under tension and wound around a core.

5 In Figure 5, we have shown two interlocked strand portions, and, for convenience, they are identified as strand 13 and strand 14.

10 The strand as it is fed to the core may be reciprocated by a reciprocatory guide 15 or it may be guided to and fro by the hand of the operator.

One or more strands may be employed and wound around independent cores or the same core, as may be desired.

15 It will be apparent from the disclosure herein that the feed rolls 6 serve as drawing rolls to drag the wire under tension over the curling edge. The core 7 and the drawing rolls 6 are driven at such relative speed as to partially release the wire tension between the rolls and core to form coils that still have tension to keep them further apart than they otherwise would be, and the coiled wire is wound in this condition.

20 If more than one strand is wound around the same core, they are wound up as a bunch of adjacent loops, and, due to the relative speed of the drawing rolls and core, the wire tension between the rolls and core is partially released to form coils that still have tension to keep them farther apart than they would otherwise be after the curling edge operation. The coiled wires are wound in the same bunch under these conditions, so that, when the bunch is taken from the core, they mat more firmly together.

30 As the strand accumulates on the core and the bunch increases in diameter, the tension on the strand increases.

40 When the bunch is removed from the core it contracts diametrically, and when a bunch as illustrated in Fig. 3 is withdrawn from the core the core opening is closed as shown in Fig. 4.

In Figure 1 the stretched strand while being wound is guided by the hand, while in Figure 2 a mechanical guide is employed.

45 When a bunch is to be started the strand is wound once or more around the core by hand.

The core feeding means operates in timed relation with the feed of the strand through the machine.

Having thus described our invention what we claim as new and desire to secure by Letters Patent, is:—

1. The method of forming a flexible and resilient metallic bunch from a coreless, helical, metallic strand whose successive coils are normally closely adjacent each other which consists in winding the strand around a core with the strand under sufficient tension to separate successive coils from each other so that the coils of one turn around the core will fit in between the spaced coils of adjacent turns around the core with the tension of the strand retained, imparting a reciprocatory movement to the strand as it passes to said core, and removing the wound strand from the core to partially release the tension of the strand and allow the turns under tension to contract so that the successive coils of each turn will spring together and hold in interlocking relation the coils of other turns that are between them.

2. The method of forming a flexible and resilient metallic bunch from a coreless, helical, metallic strand whose successive coils are normally closely adjacent each other which consists in winding the strand around a core with the strand under sufficient tension to separate successive coils from each other, so that the coils of one turn around the core will fit in between the spaced coils of adjacent turns around the core, with the tension of the strand retained, imparting a reciprocatory movement to the strand as it passes to said core, and removing the wound strand from the core to partially release the tension of the strand and allowing the turns under tension to contract so that the successive coils of each turn will spring together and hold in interlocking relation the coils of other turns that are between them, the contraction also causing the inner turns to close the core opening and interlock and maintain the bunch formation.

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