

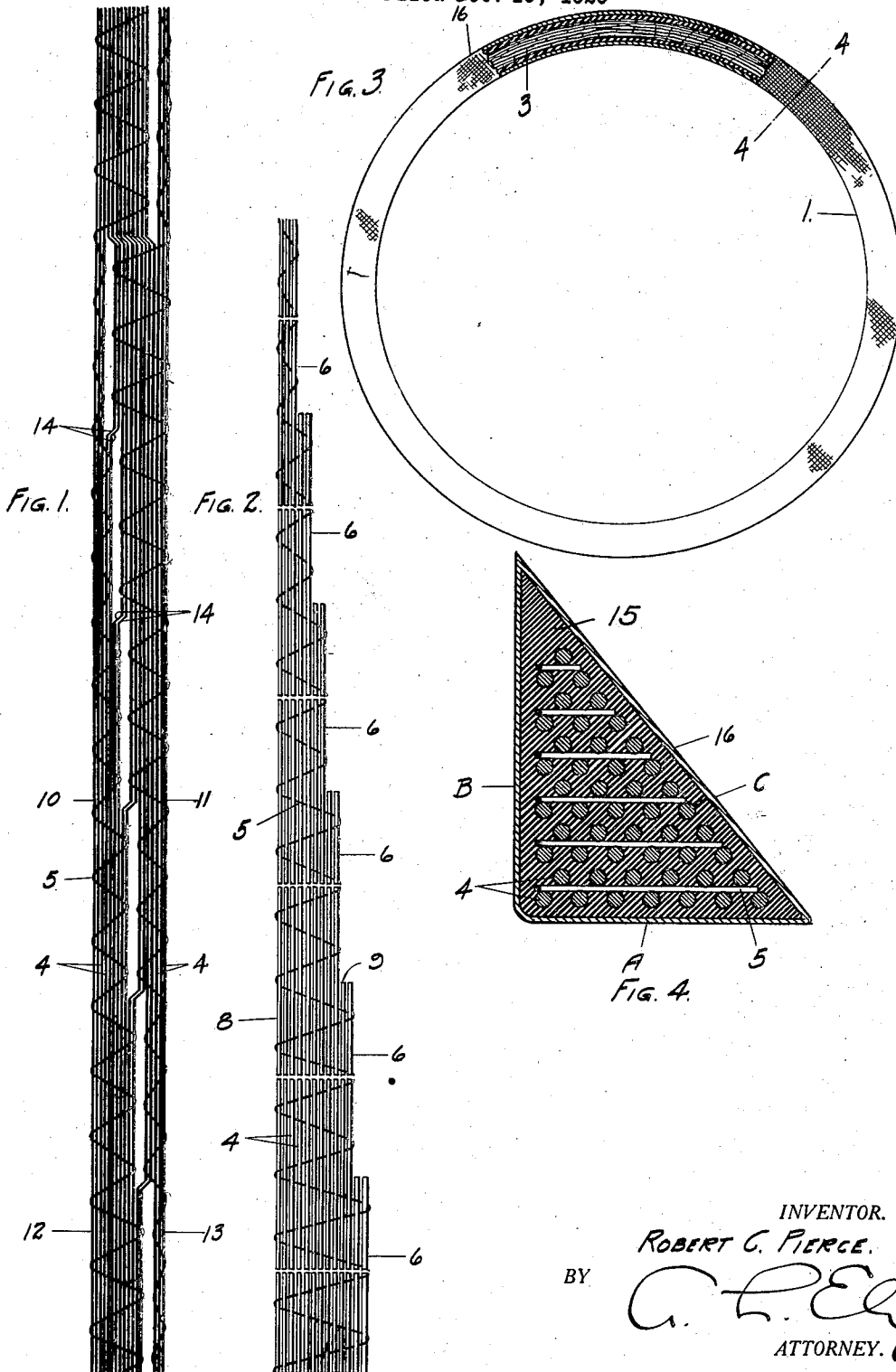
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METHOD OF WEAVING WIRE TAPE FOR TIRE BEADS

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METHOD OF WEAVING WIRE TAPE FOR TIRE BEADS.

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My invention comprehends a novel method of weaving wire tape so that it may be wound convolutely to produce a triangular bead reinforcement for pneumatic tires in which the convolutions are stepped off or offset at intervals to produce the oblique side of the triangle.

Still another purpose of my invention is to provide a method of weaving a continuous tape from a series of warp wires and a plurality of weft wires so that more than one length of tape may be simultaneously woven side by side from the same warp wires, in addition to which each strip is formed with lengths of varying width, or stepped off so that when the bead reinforcement is wound it will conform, in a general way, with the shape of the bead.

The foregoing and other objects and advantages may be obtained through the practice set forth in detail in the following description and illustrated in the accompanying drawings.

In the drawings:

Figure 1 is a diagrammatic view illustrating my method of weaving two lengths of my wire tape side by side and from a plurality of parallel warp wires;

Figure 2 is a plan view, partly broken away, of one of the lengths of tape obtained through the practice of my method;

Figure 3 is an elevational view, partly in section, showing a bead for straight side tires with my reinforcement incorporated therein; and

Figure 4 is an enlarged transverse sectional view taken on the line 4—4 of Figure 3.

In the drawings, the numeral 1 designates a straight side bead ring of standard form, that is to say it is substantially a right-angled triangle in cross-section, and 2 shows my annular wire reinforcement incorporated therein.

It will be noted that the reinforcement is constructed from a single strip of woven wire and conforms in cross-section to the shape of the bead ring 1. It comprises a horizontal base A, a vertical side B, and an oblique side C, so that when it is incorporated in the bead ring it projects into each angle thereof.

Heretofore it has been impossible to construct such a reinforcement of woven wire, so far as I am aware, because it has been im-

practical to form a triangular structure from such material. My invention affords a simple and practical solution of this problem through the following practice.

I construct a continuous flat tape 3 of woven warp wires 4 and a weft wire 5 and step off, or offset one edge of the strip at intervals to provide successively narrower lengths 6 in the strip corresponding in number to the number of convolutions desired in the reinforcement. I obtain this stepped formation of one edge of the tape by dropping off one or more warp wires 4 at intervals during the weaving operation and at one side of the strip. This procedure leaves a straight edge 8 upon one side of the strip and a notched edge 9 at the other side. The widest portion of each unit comprises the greatest number of warp wires 4 and forms the base of the reinforcement. The number of wires in this length is determined by the width of the base A of the bead ring 1 and also the gage of the wires 4. The tape thus produced is wound convolutely with its straight edge 8 forming the vertical side of the reinforcement to provide a series of superposed layers.

From the widest of the lengths 6, warp wires 4 are dropped from each succeeding length to obtain the proper inclination of the oblique side C of the reinforcement. The number of warp wires 4 dropped from each succeeding length is, of course, determined by the height to which it is desired to build the reinforcement and this is determined by the character of the bead ring which frequently varies in height in different types and sizes of tires. In the drawings two warp wires 4 are dropped from each length, but this is illustrative only. The wires 4 are preferably drawn steel wire and the weft wire 5 is relatively smaller, although wire of other forms and proportions may be utilized. Obviously a lesser number of layers may be utilized than that necessary to complete the triangle if it is desired to merely reinforce the base portion of a bead and an unequal number of wires 4 may be dropped from the lengths 6 to alter the contour of the inside face of the reinforcement, all within the spirit of my invention.

In forming my novel tape or strip 3, I propose to use a method by which two strips

of tape may be woven side by side from a common series of warp wires 4. Two weft wires 5 are woven, preferably simultaneously, through these wires 4, as shown in Figure 1 of the drawing, to produce two strips 10 and 11. The wires 5 are first woven into the wires 4 so that the widest length of one strip 10 and the narrowest length of the other strip 11 are side by side, as shown at 12 and 13 respectively. As succeeding lengths of the strips are woven, the desired number of wires are dropped at intervals by the weft wire 5 of strip 10 and are picked up by the wire 5 of the strip 11 until a narrow and wide length have been woven at the opposite end of the strips 10 and 11. At this point the weft wire 5 of the strip 10 picks up all the wires dropped from said strip which brings the weaving operation back to the starting point above described. It will be noted that through this method two strips are reversely woven side by side to produce successively narrower lengths in one strip and successively wider lengths in the other, and the weaving of both strips is accomplished simultaneously with the same series of warp wires. At the intervals where the wires 4 are dropped from one strip and woven into the other, they are preferably crimped laterally, as at 14, to space the strips 10 and 11 from each other so that they may be readily cut apart. The wire reinforcement may be incorporated in a mass of rubber 15, which is usually semicured in finished form covered with a layer of fabric 16.

Obviously, changes and modifications of the steps of my method are within the spirit of the invention and the present disclosure is intended to comprehend all changes and modifications within the scope of the appended claims. The present application is a division of my copending application Serial No. 619,838, filed February 19, 1923.

What is claimed is:

1. The method of forming wire tape for making grommets, said method comprising, weaving a weft wire to embrace a series of

warp wires and directing the path of the weft wire at intervals determined by the circumference of the grommets to embrace a different number of warp wires.

2. The method of forming wire tape for making grommets, said method comprising, weaving separate weft wires in individual paths through a common series of warp wires and directing the weft wires at intervals determined by the circumference of the grommets to respectively embrace a different number of warp wires.

3. The method of forming wire tape comprising, simultaneously weaving weft wires into a series of warp wires to form two separate groups of warp wires and simultaneously changing the number of warp wires in each group at intervals throughout the length of the tape and cutting the groups apart.

4. The method of forming wire tape comprising, weaving two weft wires into a series of warp wires to form separate parallel lengths of tape, directing the path of one weft wire to increase the width of one tape at intervals and simultaneously directing the path of the other weft wire to decrease the width of the other tape at similar intervals and cutting the tapes apart.

5. The method of forming wire tape comprising, simultaneously weaving two weft wires into a common series of warp wires to form two spaced apart tapes arranged side by side and directing the path of the weft threads to increase the width of one tape at intervals and decrease the width of the other at similar intervals and cutting the tapes apart.

6. The method of forming wire tape comprising, weaving two units from a number of warp wires and simultaneously weaving a plurality of weft wires through the warp wires and simultaneously increasing the number of warp wires engaged by one weft wire and decreasing the warp wires engaged by another weft wire and cutting the units apart.

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