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METHOD OF MANUFACTURE OF BARBED WIRE

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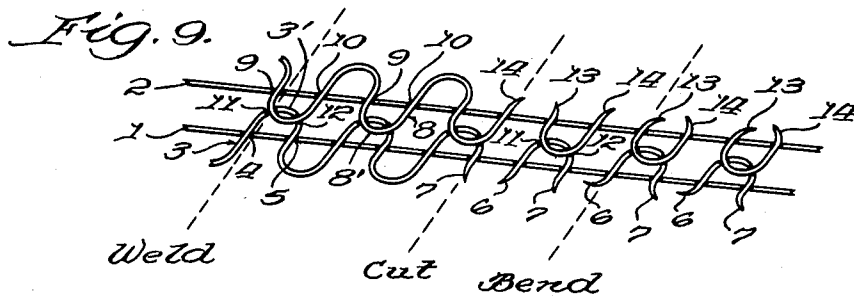


Fig. 1.

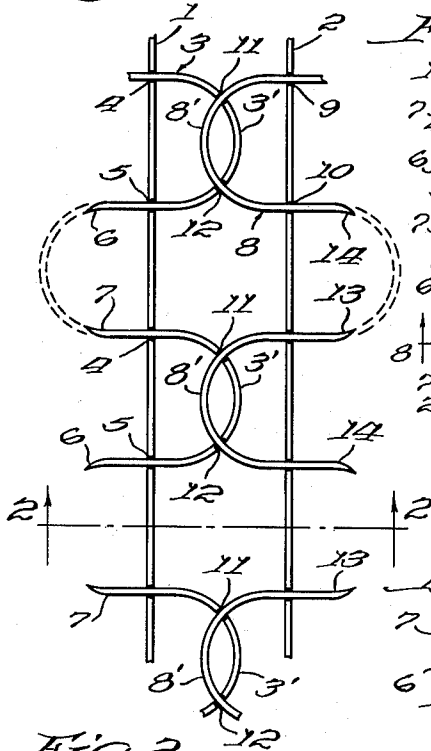


Fig. 4.

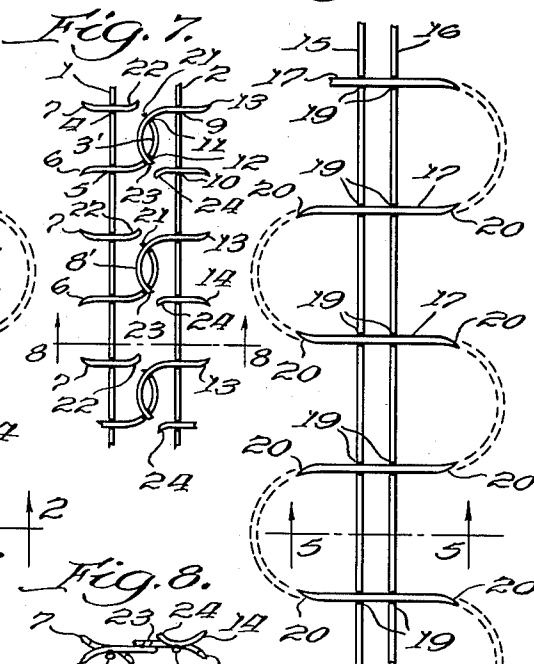


Fig. 7.

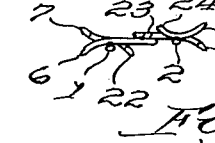


Fig. 8.

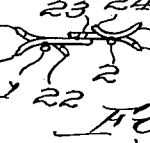


Fig. 2.

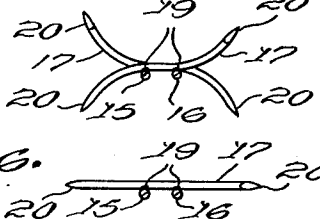
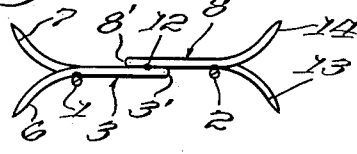
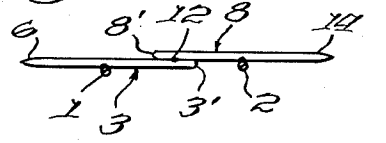


Fig. 6.

Fig. 3.



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## METHOD OF MANUFACTURE OF BARBED WIRE

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6 Claims. (Cl. 140—58)

This invention relates to barbed wire and particularly to an improved method of manufacture thereof characterized by freedom from tendency to twist and kink and by a design which lends itself to economical manufacture.

Heretofore, the general design of barbed wire has included either a pair of strands twisted together with the barb elements wound on one or the other of the strands and secured against endwise movement by the other strand, or a single narrow ribbon like strand which is twisted and on which the barb elements (also formed of flat material) are secured by tongue portions on the barb elements which are clinched over the strand and generally, further secured by a galvanizing treatment which acts as a rust preventive and incidentally serves to solder the barb elements to the strand. The twisting of the strands in both forms of wire as well as the bending incident to winding the completed wire on a reel or spool gives the wire a tendency to kink into loops when unrolled unless it is carefully handled to prevent the end from getting loose.

With the foregoing considerations in mind, it is an object of the present invention to provide a barbed wire assembly which is so constructed and arranged that the twisting of the strands thereof is unnecessary.

A further object of the invention is to provide an improved method of manufacture of barbed wire characterized by the absence of twisting of the component parts and by the cutting of the wire forming the barbs after it has been united with the strand components.

With the above objects in view, together with such other objects and advantages as may subsequently appear, the invention resides in the parts, and in the construction, combination, and arrangement of parts, disclosed, by way of example, in the following specification and illustrated in the accompanying drawings, which form a part of said specification and in which drawings:

Fig. 1 is a plan view of a section of one form of barbed wire embodying the present invention,

Fig. 2 is a transverse sectional view, taken on the line 2—2 of Fig. 1,

Fig. 3 is a view similar to Fig. 2, but showing an alternative form in that the barbs are not bent laterally of a plane containing the axes of the strand components,

Fig. 4 is a plan view of a second form of the invention in which the barbs are formed from a single wire,

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 4,

Fig. 6 is a view similar to Fig. 5 but showing the barb components lying in a single plane,

Fig. 7 is a plan view of a third form of the invention, generally like the first illustrated form but differing in that certain of the barb components are cut in the area between the strands to provide additional barb points,

Fig. 8 is a sectional view taken on the line 8—8 of Fig. 7, and

Fig. 9 is a somewhat diagrammatic perspective view showing the progression of operations in forming the barbed wire construction illustrated in Figs. 1 and 2.

Referring first to Figs. 1 and 2 of the drawings, the form of the invention there shown comprises a pair of parallel strand wires 1 and 2; the strand 1 having a

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series of spaced U-shaped barb components 3 fixed thereto by welding at 4 and 5 with the rebent portion 3' thereof extending toward the strand 2 somewhat more than half the distance between the strands and the free ends 6 and 7 of the barb component disposed outwardly from the strand 1 and bent laterally of the plane of the strands 1 and 2 in opposite directions. The strand 2 is similarly provided with a corresponding series of U-shaped barb components 8 fixed thereto by welding at 9 and 10 with the rebent portions 8' thereof overlying the rebent portions 3' of the barb components and extending toward the strand 1 somewhat more than half the distance between the strands. The intersecting portions of the barb components 3 and 8 are also welded together at 11 and 12 and the free ends 13 and 14 of the barb components 8 extend outwardly away from the strand 2 and are bent in opposite directions laterally of the plane of the strands 1 and 2 as best shown in Fig. 2.

As shown in Fig. 9 the construction is most conveniently formed by first forming the barb components as a continuous series of return bends, then welding the barb forming wires to the strands, then cutting the outer looped portions as indicated in dotted lines in Fig. 1, and finally bending the barb ends out of the plane of the strands, all of which can be effected in a continuous operation at high speed. Since the strands are not twisted, there is little tendency for the resulting wire to roll up and kink or to become otherwise entangled or to tend to twist while being handled and even though it may form into a loop in handling it is so designed that it will readily be disengaged. This mode of manufacture is further advantageous in that the sinuous formation of the barb component wire operates automatically to space the barbs along the strand components so that mechanism to cut off and apply barb elements is unnecessary, all of which contributes to greater linear speed in the production of the finished product. Also, if desired, less than all of the looped portions may be cut to form barb points.

The alternate form of the invention shown in Fig. 3 is similar to that shown in Figs. 1, 2 and 9, except for the omission of the barb bending operation.

Referring next to Figs. 4 and 5, the second form of the invention is simpler than the first described form and comprises a pair of strand elements 15 and 16 disposed in relatively close parallel relation and a series of transversely extending barb elements 17 welded to the strands in spaced relation at 19 and serving additionally to hold the strands in the desired spaced relationship. The mode of manufacture is similar to the first described form in that the barb elements are first formed of a sinuously bent wire comprising a series of opposite return bends with the straight portions between adjacent bends being of such length as to extend beyond the strands at each side a sufficient distance to provide the barbs and the looped portions thereof being similarly cut out to provide the barb points 20. Additionally the barb points along each edge of the assembled wire are bent in alternate directions out of the plane of the strands as shown in Fig. 5 or they may be left straight as illustrated in Fig. 6. The advantages of ease of manufacture and of reduced liability to roll, twist or kink and the capacity for ease in untangling discussed in connection with the first described form of the invention apply to this second form with equal force and need not be repeated.

Figs. 7 and 8 illustrate a third form of the invention which is generally similar to which the first form and to which all similar parts have been given the numbers applied thereto in Figs. 1, 2, 3 and 9. The modification consists in cutting the shanks of the barb component 3 in close proximity to the side of the weld 11 adjacent the

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strand 1 at an angle as at 21 to produce a barb point 22 and bending the barb point out of the plane of the strands 1 and 2 and similarly cutting the shank of the barb component 8 in close proximity to the side of the weld 12 as at 23 to form a barb point 24 and bending the barb point out of the plane of the strands in the opposite direction, thus providing six barb points for each pair of barb component loops. The mode of manufacture would be the same as described and illustrated in connection with Fig. 9 with the addition of cutting and point bending means to form the added barb points. The resulting barbed wire has the same advantages as the previously described forms and additionally, by reason of the added barbs is still more effective than those forms.

It will be appreciated that the other forms of the invention can be manufactured by the same series of steps as previously described in connection with the showing in Fig. 9 and that the necessary modifications in the manufacturing equipment would be apparent to those skilled in the art.

While I have described and illustrated certain modes of execution of my invention in the foregoing specification, I do not intend thereby to limit myself to the exact forms so disclosed, and the invention embraces all such modifications in the parts, and in the construction, combination, and arrangement of parts as well as modifications in the method of manufacture, as shall come within the purview of the appended claims.

I claim:

1. The method of making a barbed wire structure which comprises providing a pair of parallel strand wires and placing a longitudinally co-extensive, previously sinuously curved barb component wire in superimposed relation on said strand wires with at least part of the loops of said barb component wire disposed laterally beyond one of said strand wires, then welding said barb component wire to said one strand wires at points of intersection therewith, then cutting said laterally projecting loops with resultant formation of barb points on the portions of said barb component wire which are welded to said one strand wire, and finally bending said barb points laterally of the plane of said pair of strand wires.

2. The method of making a barbed wire structure which comprises providing a pair of strand wires in spaced parallel relation and placing said wires each in superimposed relation with one each of a pair of longitudinally co-extensive, previously sinuously curved barb component wires and with certain of the looped portions of one of the barb component wires disposed in superimposed relation with looped portions of the other barb component wire and with other looped portions of each of said barb component wires being disposed laterally beyond the strand wire with which it is associated and away from the other strand wire, then welding each of said barb component wires to the strand wire with which it is associated at points of intersection therewith and welding the superimposed portions of said barb component wires together at their points of intersection, and then cutting said laterally projecting looped portions of one of said barb component wires to form barb points and finally bending said barb points laterally of the plane of said strand wires.

3. The method of making a barbed wire structure which comprises providing a pair of strand wires in spaced parallel relation and placing said wires each in superimposed relation with one each of a pair of longitudinally co-extensive, previously sinuously curved barb component wires and with certain of the looped portions of one of the barb component wires disposed in superimposed relation with looped portions of the other barb component wire and with other looped portions of each of said barb component wires being disposed laterally beyond the strand wire with which it is associated and away from the other strand wire, then welding each of said barb component wires to the strand wire with

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which it is associated at points of intersection therewith and welding the superimposed portions of said barb component wires together at their points of intersection, and then cutting said laterally projecting looped portions of at least one of said barb component wires to form barb points, and finally bending said barb points laterally of the plane of said strand wires.

4. The method of making a barbed wire structure which comprises providing a pair of strand wires in spaced parallel relation and placing said wires in superimposed relation with a longitudinally co-extensive, previously sinuously curved barb component wire having the looped portions thereof extending beyond said pair of strand wires at each side thereof, welding the barb component wires to both of said strand wires at the points of intersection therewith and then cutting the looped portions of said barb component at one side of said strand wires with resultant creation of barb points on the portions thereof attached to said strand wires and finally bending said barb points out of the plane of said strand wires.

5. The method of making a barbed wire structure which comprises providing a pair of strand wires in spaced, parallel relation and placing said wires in superimposed relation with a longitudinally co-extensive, previously sinuously curved barb component wire having the looped portions thereof extending beyond said pair of strand wires at each side thereof, welding the barb component wire to both of said strand wires at the points of intersection therewith, then cutting the looped portions of said barb component with resultant creation of barb points on the portions thereof attached to said strand wires, and finally bending said barb points laterally of the plane of said strand wires.

6. The method of making a barbed wire structure which comprises providing a pair of strand wires in spaced parallel relation and placing said wires each in superimposed relation with one each of a pair of longitudinally co-extensive, previously sinuously curved barb component wires and with certain of the looped portions of one of the barb component wires disposed in superimposed relation with looped portions of the other barb component wire and with other looped portions of each of said barb component wires being disposed laterally beyond the strand wire with which it is associated and away from the other strand wire, then welding each of said barb component wires to the strand wire with which it is associated at points of intersection therewith and welding the superimposed portions of said barb component wires together at their points of intersection, and then cutting said laterally projecting looped portions of at least one of said barb component wires to form barb points disposed laterally beyond said strand wire and cutting portions only of said one barb component between said strand wire to form other barb points disposed between parallel planes containing said strand wires, and finally bending all of said barb points laterally a plane extending longitudinally of and containing both of said strand wires.

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