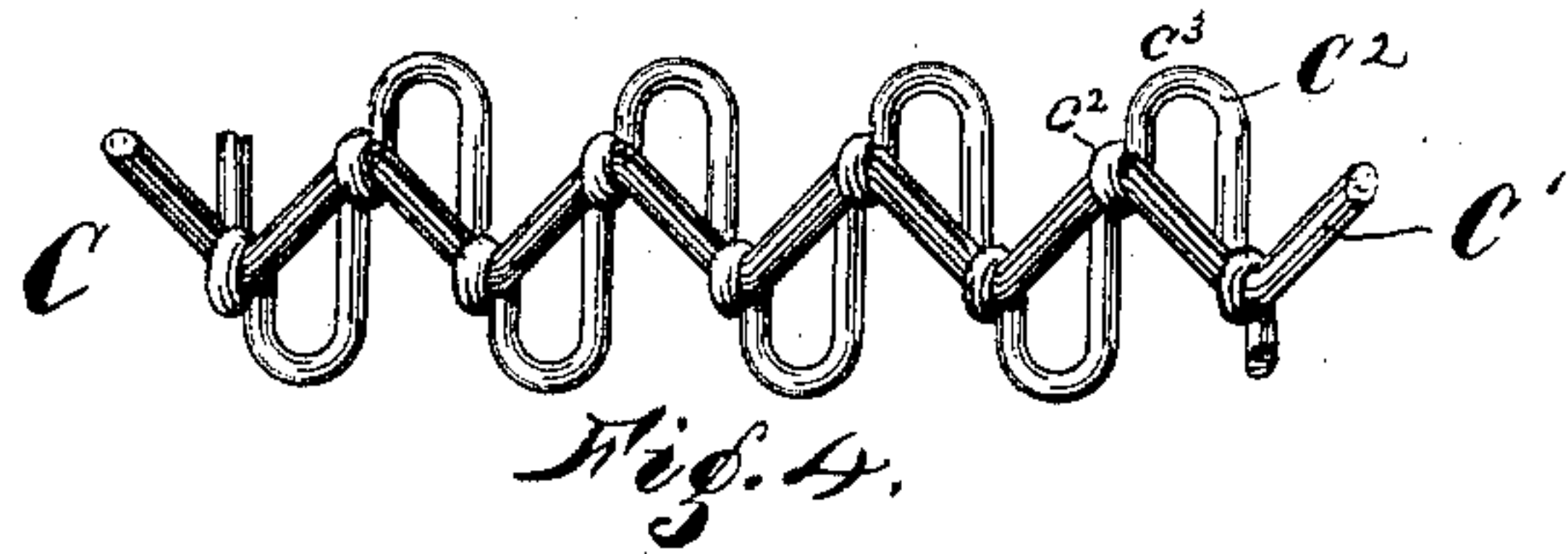
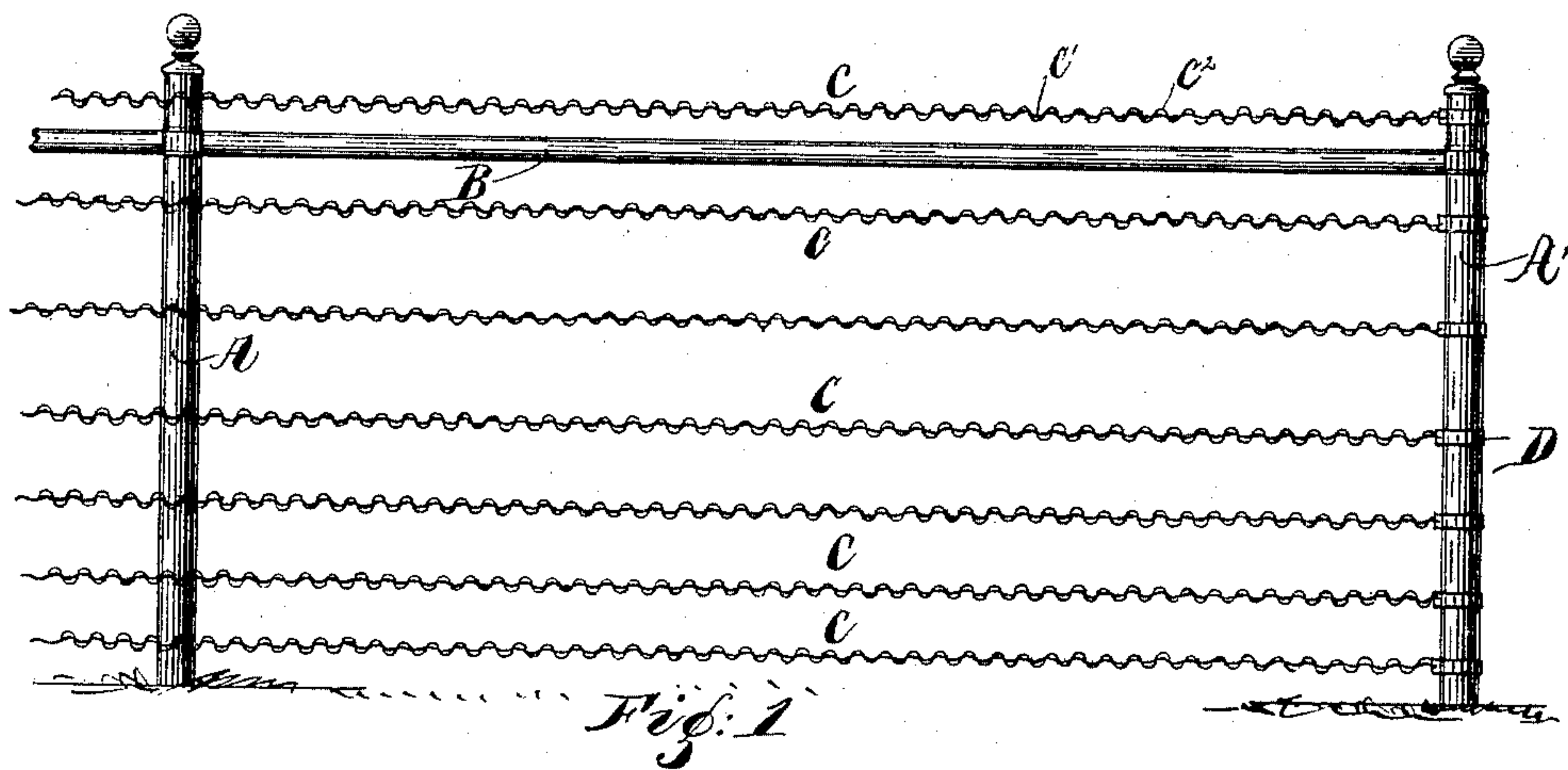
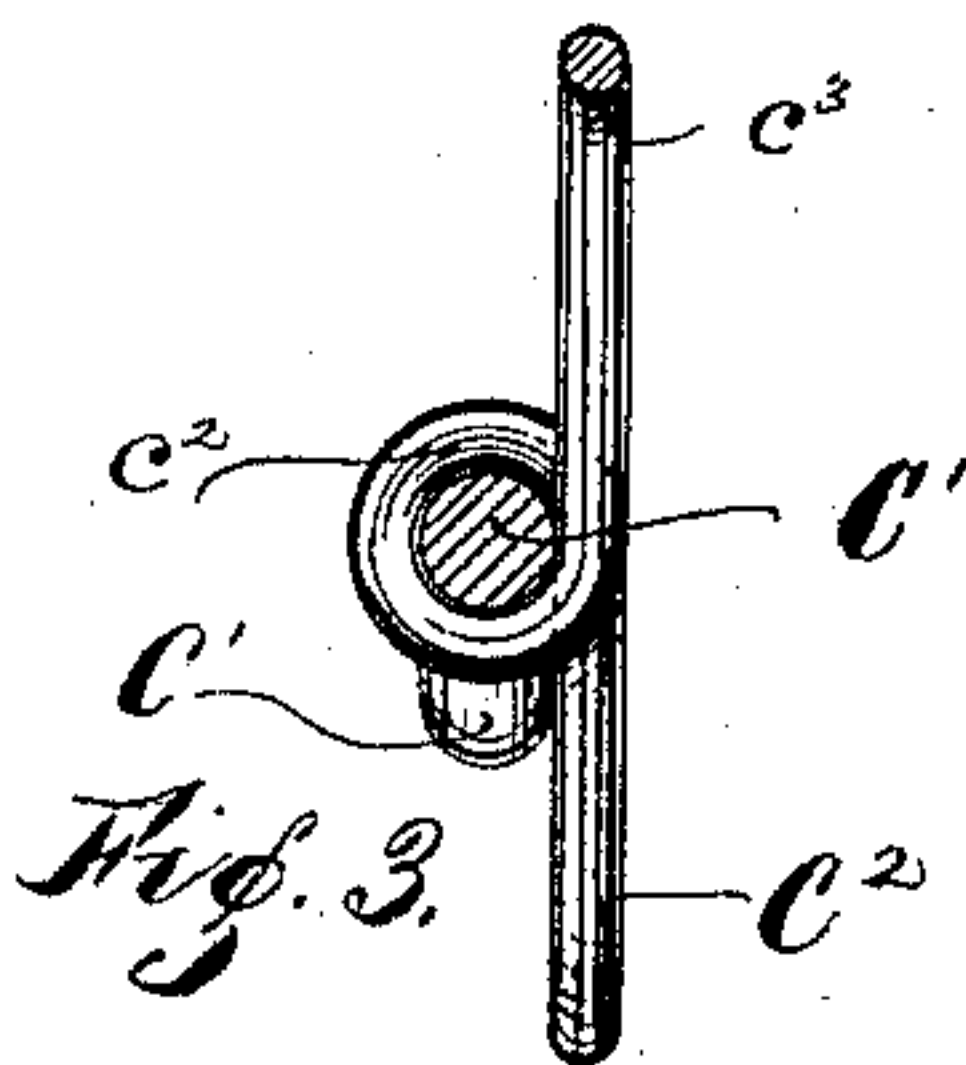
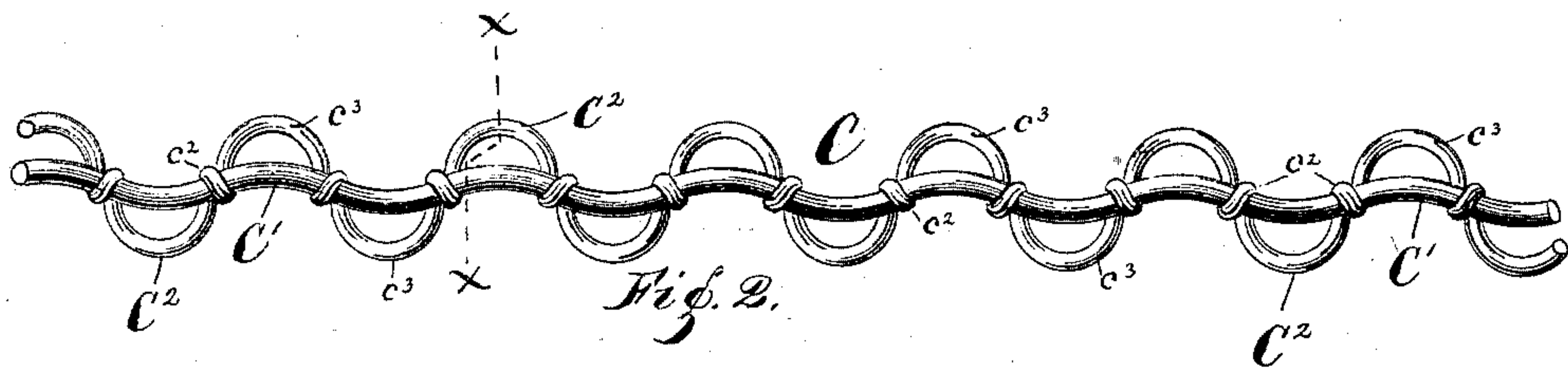


(No Model.)

J. B. CLEAVELAND.  
WIRE FENCE.

No. 475,719.

Patented May 24, 1892.



Witnesses.  
E. C. Ropkey  
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# UNITED STATES PATENT OFFICE.

JOHN B. CLEAVELAND, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO MARY E. CLEAVELAND, OF SAME PLACE.

## WIRE FENCE.

SPECIFICATION forming part of Letters Patent No. 475,719, dated May 24, 1892.

Application filed October 2, 1891. Serial No. 407,491. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN B. CLEAVELAND, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Wire Fences; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to improvements in wire fences.

The object of the invention is to construct a wire fence that will be ornamental and in which the wires will be sufficiently prominent to be readily distinguished, also to construct a fence with wires that may be drawn taut without distorting the ornamental pattern of the wire and that will compensate for longitudinal expansion and contraction arising from changes in temperature without the necessity of automatic governors.

With these objects in view the invention consists, primarily, in a series of wire strands attached by any suitable means to posts of any desired pattern, each of said wire strands being constructed of two or more separate wires, one of which will form a core around which the others will be bent to make an ornamental pattern.

The invention consists, further, in the peculiar manner in which the wires are shaped and in the peculiar manner in which they are united to form the strand.

I accomplish the objects of this invention by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a view in side elevation of a panel of fence constructed in accordance with this invention; Fig. 2, a front view of a wire strand shown full size, and Fig. 3 a transverse section of Fig. 2 through the line X X; Fig. 4, a detail showing a zigzag instead of a waved core.

Similar letters refer to like parts throughout the several views of the drawings.

A represents the posts, which are here shown as tubular metal posts; but any other kind may be used.

B is the tubular rail, extending horizontally between the posts in the manner as usually adopted for yard-fences.

C are the wires, which are fastened to the posts in the usual manner and are drawn taut by means of the tighteners D, or the wires may be tightened by any of the well-known methods such as are used in tightening wires on farm or other fences, care being taken to stretch the wire sufficiently and to secure the ends well.

Each of the wire strands C are constructed of the central or core wire C' and the subordinate wire C<sup>2</sup>. The wire C' will generally be larger in diameter than the others and will be bent into a series of curves forming a wave-like pattern, as shown in Fig. 2. Upon and around the wire C' the wire C<sup>2</sup> will be bent into a series of short spirals c<sup>2</sup>, which encircle and tightly impinge the wire C', and the spirals c<sup>2</sup> will be connected by the U-shaped sections c<sup>3</sup>, which alternate with the spirals in regular succession, as shown in the drawings, and are continuous and integral, being all formed from a single continuous wire.

In combining the wires C' and C<sup>2</sup> this peculiarity of arrangement is observed—i. e., that the outward or U-shaped bend of the wire C<sup>2</sup> is directly opposite the apex of the correspondingly-outward curve of the wire C'. By this arrangement the stems of the U in the ornamental wire C<sup>2</sup> are afforded a bearing against the central strand C' to an extent sufficient to prevent the turning of the ornamental wire around the center wire, so that when the wire is in place and stretched upon the posts the ornamental U-shaped projections will retain a vertical position in the perfect alignment so essential to the beauty and symmetry of the fence.

The advantages of a central wire, bent as described, over a straight wire are numerous. In the first place it produces a more pleasing effect. It gives a bearing or purchase to the stems of the U-shaped ornamental wires, enabling them to act as a series of springs which tend to hold the core-wire in its curved condition, resisting alike any tendency to straighten out or to increase the degree of curvature of the central wire, and as a result



affording a yielding resistance to expansion or contraction and keeping the wire taut under all conditions of temperature.

It is essential in wire fences that the wires  
 5 be drawn taut and kept in that condition, and a serious objection to wire fences has been raised because of the tendency of the wires to become loose by expansion in summer, causing them to sag down between the posts, while  
 10 in winter the contraction due to a temperature below the normal causes the wires to contract and break. This is the inevitable result if a straight wire is used; but by substituting a wire curved and bent, as I have  
 15 described and shown, the wire becomes at once self-compensating. The curves allow it to straighten out and lengthen sufficiently to compensate for any shortening due to contraction; but the wire will resume its original  
 20 curvature as soon as released by the expansion and the slack in the wire will thus be taken up by the increased curvature. The efforts of the core-wire to resume the original curvature given it in its manufacture are materially assisted by the spring-like action of  
 25 the secondary or ornamental wire in the manner as previously described. By using a curved core-wire the tendency will be to straighten out the curves in the operation of  
 30 tightening the wire, and this action will tighten up the spirals  $c^2$ , thereby fixing the ornamental wire more securely to the core.

In the modification shown in Fig. 4 the central core-wire is bent into a zigzag pattern,  
 35 with angular bends instead of curves, and the point of attachment between the ornamental and the core wire is located at the angles in the zigzag wire. The joint action of the two wires in this construction is similar to that

of the two wires in the other pattern and will therefore not need further description.

I claim—

1. In a fence, the combination, with the posts, of a series of wires attached thereto, each of said series of wires being constructed  
 45 from a single horizontal core-wire  $C'$ , bent as described, with a single continuous wire  $C^2$  bent around said core to form the spirals  $c^2$  and the **U** or other shaped ornamental projections  $c^3$ , connecting said spirals and integral therewith, substantially as described. 50

2. An ornamental wire composed of a main wire bent into a series of curves or zigzag shapes forming a wave-like pattern, and one or a series of secondary wires wound around  
 55 it and bent into **U**-shaped loops between the windings, substantially as described.

3. The combination of the wires  $C'$  and  $C^2$ , bent so as to form a continuous spring, the loops of the wire  $C^2$  engaging the side of the  
 60 wave-like curvatures of the wire  $C'$ , so that both act together in resisting and giving when subjected to pressure.

4. The combination of the wires  $C'$  and  $C^2$ , bent so as to form a continuous spring, the  
 65 loops of the wire  $C^2$  engaging the side of the wave-like curvatures of the wire  $C'$ , so that both wires act together in retaining the original form and placement when expansion or  
 70 contraction from any cause takes place, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN B. CLEAVELAND.

Witnesses:

JOSEPH A. MINTURN,  
 ERNEST ROPKEY.