

No. 690,514.

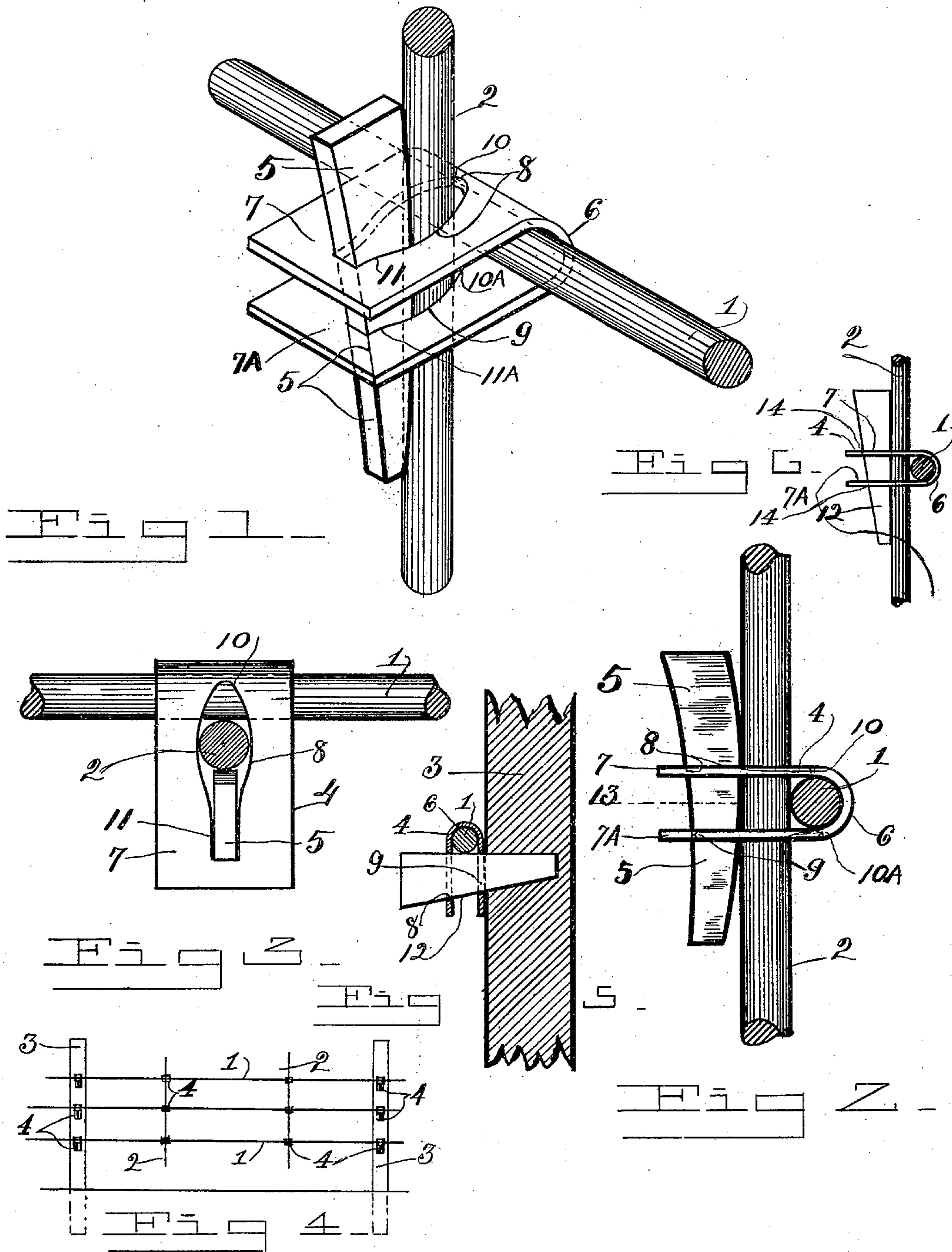
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C. T. BROWN.

WIRE FENCE.

(Application filed Feb. 25, 1901.)

(No Model.)



WITNESSES:

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WIRE FENCE.

SPECIFICATION forming part of Letters Patent No. 690,514, dated January 7, 1902.

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To all whom it may concern:

Be it known that I, CHARLES T. BROWN, a citizen of the United States of America, residing at Denver, in the county of Arapahoe and State of Colorado, have invented certain new and useful Improvements in Wire Fences; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

My invention relates to improvements in wire fences; and the objects of my invention are, first, to provide means for keying the cross-wires—that is, the vertical and horizontal wires of wire fences at the point where they cross each other—so securely together that they cannot be accidentally unkeyed; second, to provide a supporting device for wire fences, in which wires of different diameters may be used and in which wires of larger diameter than the keying device may be used. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of a wire fence embodying my invention. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of Fig. 2. Fig. 4 is a side elevation of a fragment of a wire fence, showing my invention. Fig. 5 is a fragmentary vertical section of a post, showing the clip and wire secured to it by driving the key into the post; and Fig. 6 is a side elevation of a fragment of a stay-rod and a cross-section of the horizontal wire, showing a straight wedge-key in my improved form of clip.

Similar figures of reference refer to similar parts throughout the several views.

Referring to the drawings, Fig. 4 represents a section of a fence embodying my invention. The numeral 1 designates the horizontal wires, of which there are always several in a fence, and 2 the vertical stay-wires which form a part of my fence. I secure the horizontal wires to the post and also the vertical stay-rod wires by means of clips 4 and keys 5. The clips are of substantially a yoke shape. The clip is formed, preferably, of a narrow strip of

wrought-iron or steel bent or folded up centrally of its length in a semicircular curve, but can be, if desired, a malleable or steel casting. The opposing sides 7 and 7^A of the yoke are of substantially equal length and are preferably formed parallel with one another, although they may diverge slightly from one another. When the clips are used at the intersection of the horizontal and vertical stay-rods to key them together, they stand in a horizontal position, as shown in Fig. 2, but when used to secure and support the horizontal wire to the posts the stay-rod is not used and the key is made wider and longer and is driven into the post, and in order to do this the clip is turned in a vertical position and one of its sides lies against the post, as shown in Fig. 5. The clips contain through their opposite side members holes 8 and 9, which lie wholly in the sides of the clip. The holes are made long enough to receive a wide substantial key 5 and the vertical stay-wire 2.

One of the essential objects of my invention is to provide means for using stay-rods and horizontal wires of larger diameter than the thickness of the key, the object being to increase the diameter of the stay-rods in particular and to decrease the thickness of the keys. In order to accomplish this, it is necessary to make the apertures of such a form that stay-rods of different diameters can be used and of also larger diameter than the key, and it is also necessary that the end of the apertures in which the key rests should be narrowed to fit loosely the sides or thickness of the key. In order to meet these conditions, it is necessary to make these apertures of an oval or diamond shape throughout the greater portion of their length, commencing at their stay-rod-receiving end 10, and to so form them that their sides will converge into a slightly-tapering or, if preferred, a straight portion 11, a trifle wider than the width of the key to be used, as above described. This form of aperture enables me to use stay-rods of different diameters, from the thickness of the key to about three times its thickness. Thus in Fig. 3 a stay-rod is shown in the oval aperture about three times larger in diameter than the thickness of the key, while it can be readily seen that if stay-rods and horizon-

tal wires of smaller diameter were used the stay-rods would fit without too much side play in the oval aperture, which becomes smaller and smaller to its end. Consequently
 5 wires of the same or of less or of any size up to several times the thickness of the key can be used with this oval form of aperture. The only difference between the oval form shown
 10 and a true diamond shape is in curving the ends and sides at the points where the lines of the diamond intersect. This form of aperture is a great improvement over the form of apertures in use in fences of this character.

I find that it is preferable to make the apertures in both members of substantially the same length, as it enables me to punch them out with the same punch.

The greatest point of weakness and unreliability in a fence of this character is at the
 20 connecting-points of the stay-rods with the horizontal wires. It is found in practice that straight keys or keys that have a straight side lying against the vertical stay-rods, although they are inserted by a pair of tongs which are
 25 capable of forcing them very tightly into the clips and against the stay-rod, do not hold under sudden downward pressure, such as a person placing a foot down heavily on a horizontal wire close to a clip would give to it or attempting to climb over the fence by placing
 30 the weight of the body on one of the horizontal wires. The clips and keys seem to work loose, which is probably due to the stretch of the clips under the straining pressure of the
 35 keys and probably to some extent to repeated expansion and contraction, which is unequal in the clip and key and the wires.

The principal object of my invention is to provide a key that will lock the clip and wire
 40 together against accidental displacement. In order to carry out this feature of my invention, I use a curved or crescent-shaped key 5, the outer peripheral curve of which is so arranged in relation to the inner peripheral
 45 curve and the apertures in the clip that the key bears on the stay-rod centrally between the side members of the clip and nowhere else.

The difference between the bearing of a
 50 straight key and a crescent key is shown in Figs. 2 and 6. In Fig. 6 it will be noticed that the straight side of the straight key 12 bears against the stay-rod the entire length of the key, while its bearings at 14 in the clip
 55 are very short, both bearing-surfaces in the clip being quite a number of times less than the bearing of the key against the rod. This would not cut any material figure in the holding power under the law that the friction is
 60 proportional to the pressure and not to the engaging surfaces; but time and condition make a change in this device. The longer the clip and wire and key are exposed to the weather the greater is the accumulation of
 65 rust or oxidization from rain and snow, and the stretch of the clips though very slight is certain under the continued swaying of the fence

in heavy winds and the expansion and contraction of heat and cold. The result is that a time comes when a pressure on the horizontal wire will cause the weakest joint to break, and this joint is always the point of contact between the holes in the clip and the back or heel of the key. The joint between the straight side of the key and the stay-rod
 75 is much the stronger, as the rust which acts as a cementing agent under these conditions having a far greater surface to act on cannot be so easily broken. Consequently where pressure is placed on the horizontal wire it
 80 will break the joint between the clip and key and the horizontal wire and clip will slide down on the vertical stay-rod, leaving the key cemented with rust sticking to the stay-rod and completely breaking the connection,
 85 and there is nothing to prevent the clip from falling off.

My crescent-shaped key completely obviates this defect, as it reverses the conditions. It will be seen at a glance that the bearings
 90 of the key against the stay-rod are reduced to a point at substantially the dotted line 13 in the curve of the key and that this point is several times less in area than the bearings of the key in the end of the apertures in the
 95 clip. Consequently the weakest point is between the key and the stay-rod, and if under natural conditions or by pressure on the horizontal wire a joint breaks it will be the joint between the key and the stay-rod. Then the
 100 horizontal wire, the clip, and the key will slide down on the stay-rod, which does not break the connection, as the key moves with the clip and is likely to be cemented to it by rust; but even if both joints should break under a
 105 pressure on the horizontal wire the key would still remain in the clip, as its own weight and the friction of the two bearings in the clip would be greater than the friction of the single bearing against the stay-rod.
 110

While in Fig. 5 I show a straight clip and straight key 12 in a fragment of a post to illustrate the application of my oval apertures in each member of the yoke, nevertheless the crescent key can also be used in the
 115 post, if desired.

It will also be readily understood that under the great pressure with which the keys are forced into the clips the point of contact of the curved surface of the key would dent
 120 into the edge or round side of the stay-rod and that this indentation would act as a slight lock against vertical movement of either one or the other.

My invention is simple. It will decrease
 125 the cost of manufacture of fences of this character and will make them permanently reliable and durable.

Having described my invention, what I claim as new, and desire to secure by Letters
 130 Patent, is—

1. In wire fences, the combination with the horizontal wires and vertical stay-rod, of a key-clip comprising a yoke-shaped piece of metal

having in each of its ends a hole of oval form adapted to receive wire rods of different diameters and narrowing into a slot toward the extremity of the clip, and a thin, tapering key adapted to fit said slot, substantially as described.

2. In a wire fence, the combination with the horizontal wires and a vertical stay-rod of a yoke-shaped clip containing two oval holes through its sides registering with each other and of the same length and adapted to receive stay-rods of different diameter and at their outer ends terminating in a tapering, narrow slot adapted to receive tapering keys of less thickness than the diameter of said stay-rods, substantially as described.

3. In a wire fence, the combination with a horizontal wire, a vertical wire crossing and bearing against said horizontal wire and a thin, tapering key, of a yoke-shaped clip folded to surround at its curved end said horizontal wire and containing through its sides substantially centrally of the length and width of each side a substantially oval-shaped aperture arranged to register with one another and adapted to receive and support said vertical wire in bearing contact against said horizontal wire the ends of said apertures adjacent to the ends of said yoke-shaped clip terminating in a narrow aperture adapted to receive said thin tapering key, whereby wires of different diameters and larger in diameter than the thickness of said key may be locked rigidly together, substantially as described.

4. In a wire fence the combination with the horizontal wire, of a narrow strip bent centrally into a yoke-shaped clip and adapted at its curved end to fit against said horizontal wire, and its ends containing registering oval apertures narrowing near the extremities of said clip into slots of equal length; a thin, flat, tapering key in the narrow portion of said apertures and a vertical stay-rod of larger diameter than the thickness of said key in the oval part of said apertures bearing against said horizontal wire, substantially as described.

5. In a wire fence, the combination of a plurality of horizontal wires and vertical sup-

porting-wires crossing said horizontal wires at suitable intervals apart, with yoke-shaped clips arranged to surround said horizontal wires, having oval apertures opening into keyways at one end, adapted to support said vertical wires; and keys adapted to fit in said keyways and key said vertical wires to said clip and horizontal wires substantially as described.

6. In a wire fence, the combination with the horizontal wire and the stay-rod, of a yoke-shaped clip having a rounded end arranged to fit over and against said horizontal wire and containing through its sides oval-shaped apertures arranged to support said stay-rod in bearing contact against said horizontal wires, said oval-shaped apertures converging into narrow key-receiving apertures and extending to near the ends of the sides of said clip and a curved tapering key fitting into said narrow key-apertures and bearing against said stay-rod centrally between the side members of said clip and in horizontal alinement with the axis of said horizontal wire, substantially as described.

7. In a wire fence, the combination of the horizontal wire and the vertical stay-rod, with the yoke-shaped clip provided with oval apertures in its side members converging into a narrow key-receiving aperture at the ends of said clip and a thin, curved and substantially crescent-shaped tapering key fitting operatively in the narrow key-apertures of said clip and engaging in bearing contact only that portion of said stay-rod that extends between the side members of said clip, substantially as described.

8. In a wire fence, the combination of the horizontal wire, the vertical stay-rod and the supporting-posts, with the yoke-shaped clip having the oval apertures and communicating narrow keyways, and the curved, tapering key, substantially as described.

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

CHARLES T. BROWN.

Witnesses:

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CLAUDE A. DUNN.