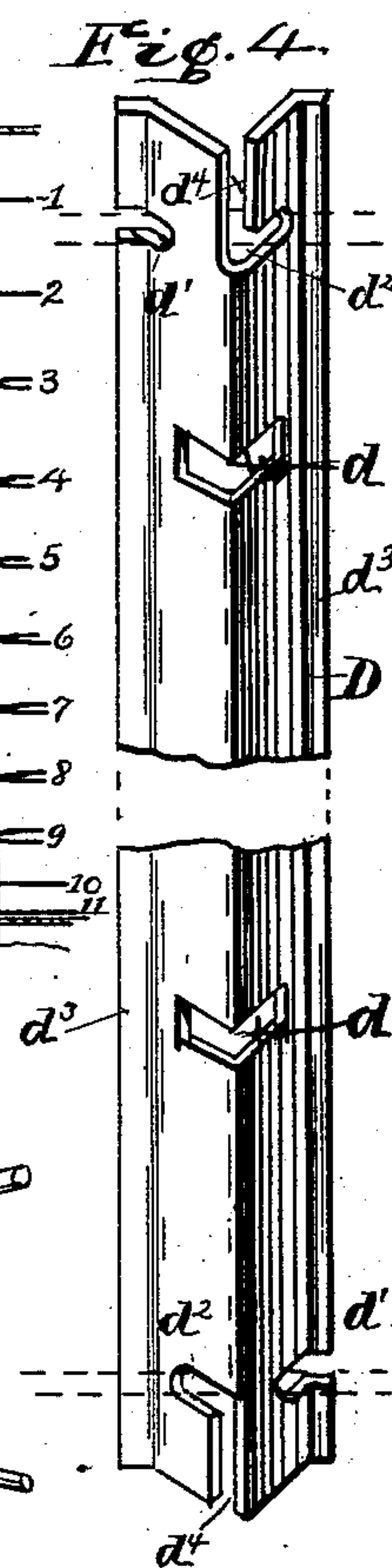
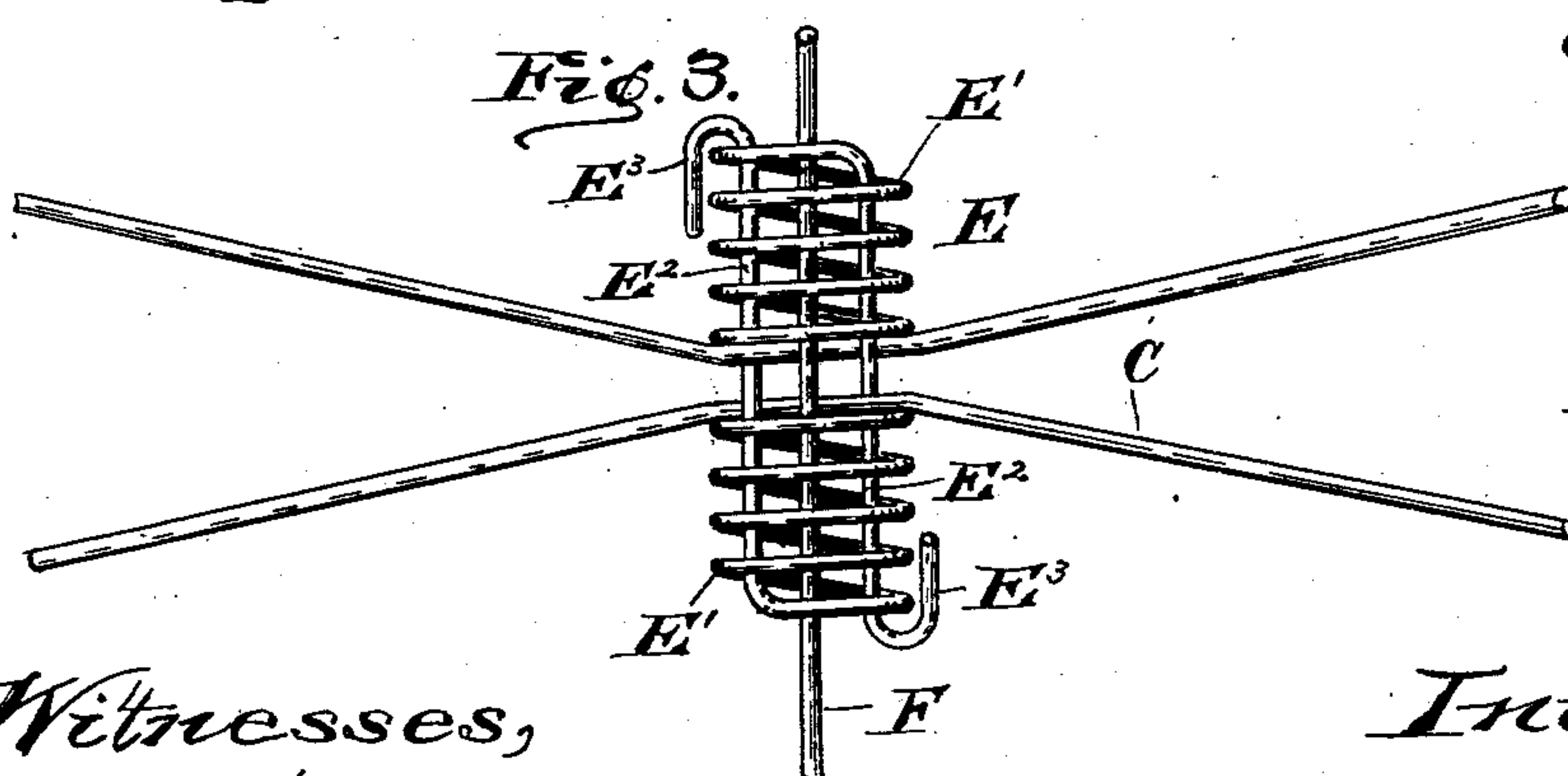
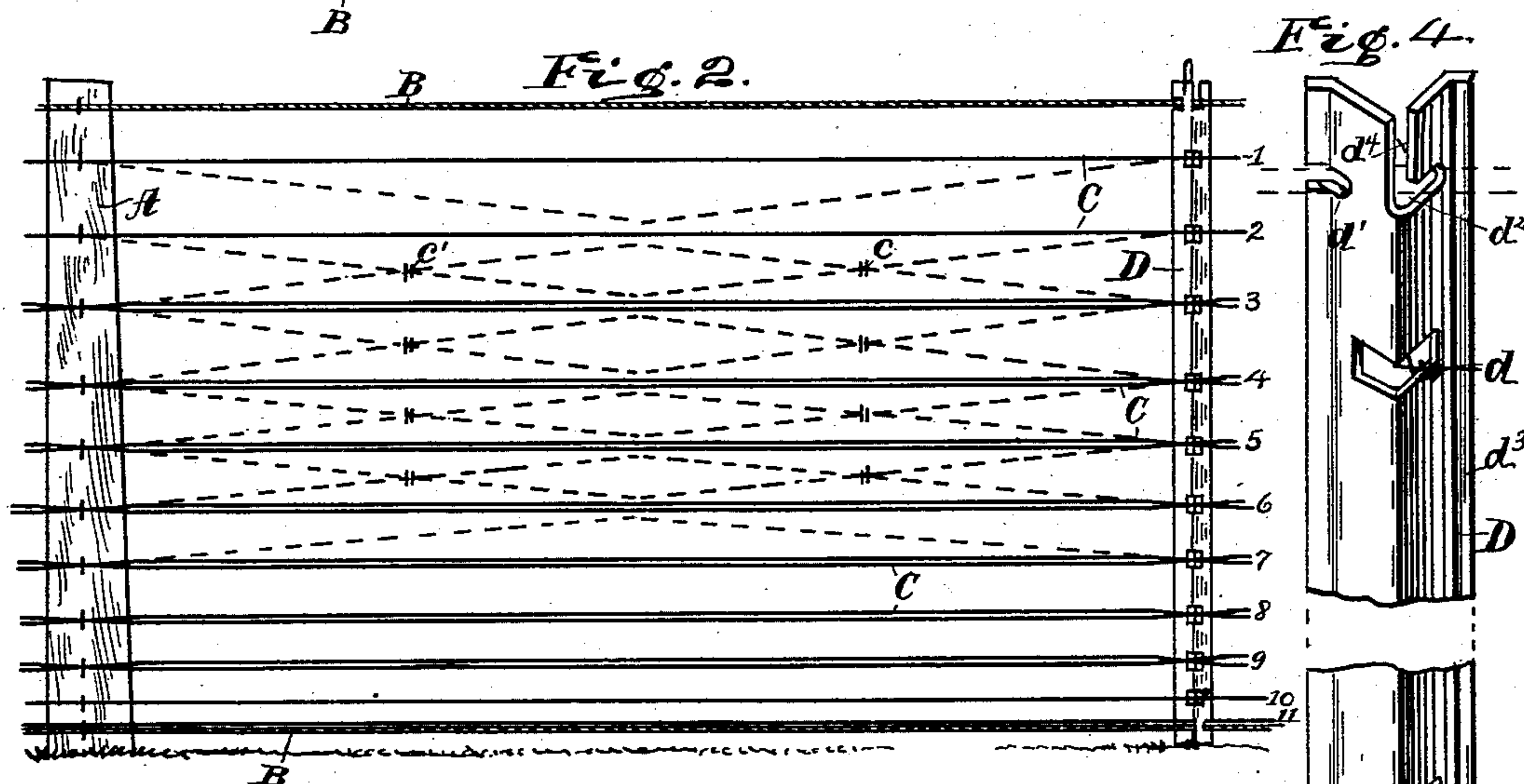
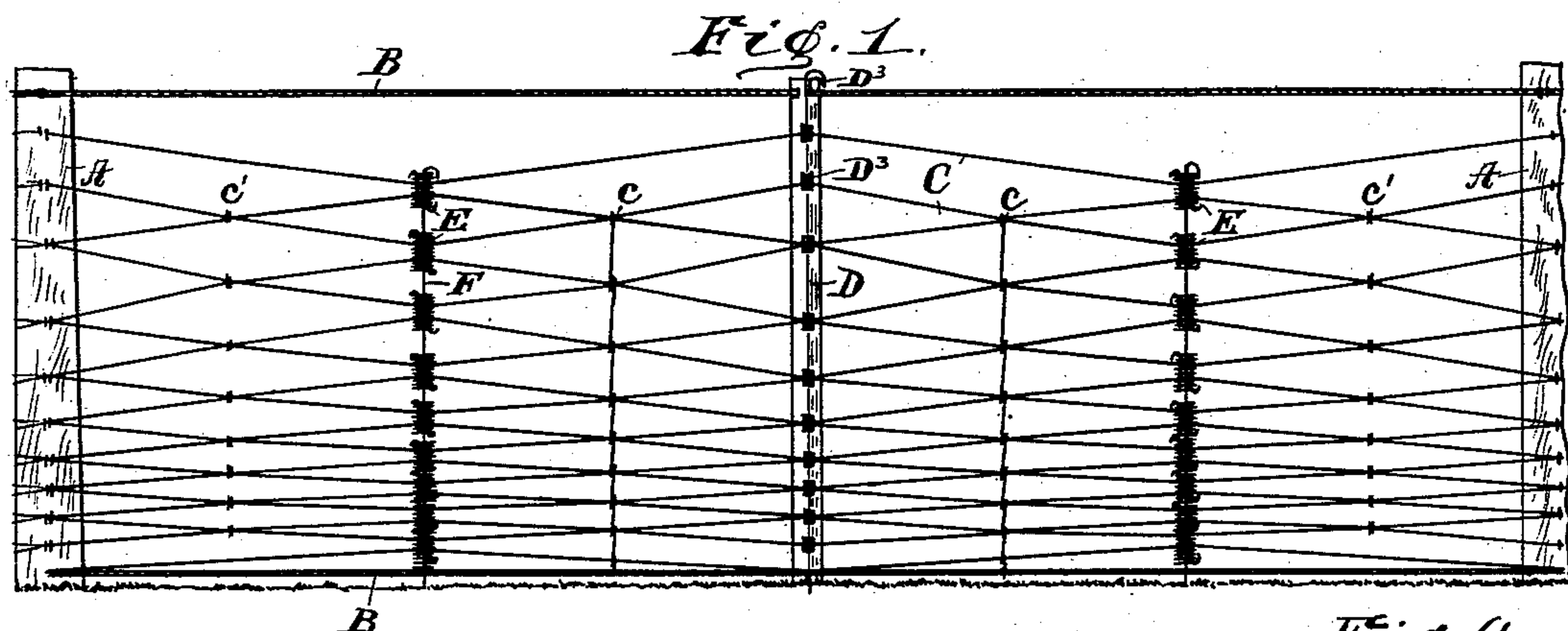


(No Model.)

T. C. GREENE.  
FENCE.

No. 569,019.

Patented Oct. 6, 1896.



Witnesses,  
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# UNITED STATES PATENT OFFICE.

THOMAS C. GREENE, OF LIBERTY, INDIANA, ASSIGNOR, BY DIRECT AND MESNE ASSIGNMENTS, TO ANNA P. GREENE, OF SAME PLACE, BENJAMIN C. KOCH, OF TREMONT, ILLINOIS, AND LOTTIE A. KINSEY, OF INDIANAPOLIS, INDIANA.

## FENCE.

SPECIFICATION forming part of Letters Patent No. 569,019, dated October 6, 1896.

Application filed October 14, 1895. Serial No. 565,612. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS C. GREENE, a citizen of the United States, residing at Liberty, in the county of Union and State of Indiana, have invented certain new and useful Improvements in 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 fences, and more particularly to farm-fences, although the same principle of construction might be applied to advantage in the construction of fences for lawns, cemeteries, &c.

The object of the invention is to provide a wire fence the bulk of which will be constructed from single straight wire strands, which will be secured together in such a manner as to provide a very strong and rigid fence and also a fence of great resiliency. The object also is to provide a self-compensating mechanism that will allow for expansion and contraction of the wires, due to variation in the temperature.

The object, further, is to improve certain details of construction, such as will be fully described in the specification and pointed out in the claims.

Referring to the accompanying drawings, Figure 1 is a view in side elevation of a panel of a farm-fence constructed in accordance with the spirit of my invention; Fig. 2, a detail showing the manner of stringing the wires horizontally before bringing them together in diamond-shaped patterns and tying them. The dotted lines in this figure show how the wires are brought together into diamond shapes. Fig. 3 is a detail in side elevation showing a form of elastic tie used for joining the wires together at certain intervals, and Fig. 4 is a detail in enlarged view of the metal stay which I will use in the construction of my fence.

Similar letters and numerals of reference indicate like parts throughout the several views of the drawings.

A represents the posts, which may be of wood, as shown in the drawings, or iron or any other convenient kind of post may be used.

B are marginal strands made from cables of two or more wires twisted together. These marginal wires run horizontally, or, more exactly, parallel with the surface of the ground being fenced.

C are the intermediate wires, which are strung between the two marginal wires B and are run diagonally with relation to the direction of the marginal wires. My invention largely consists of the peculiar manner in which these diagonal wires are strung, and this will be better understood by reference to Fig. 2, which shows the appearance of the intermediate wires after they are strung on the posts, but before they are brought together into their diagonal positions and tied at their points of nearest approach. It will be noticed that the uppermost two strands of the intermediate wires are of single wires each, and that the remaining strands, except the two lower courses, are of two wires each. The wires for the entire line of fence will be strung upon the posts in this manner, after which the stays D will be applied. In the drawings I have shown one stay intermediate between each two posts, but I do not wish to limit the construction to the use of a single stay in this manner, as it is quite apparent that more than one stay might be used between each two posts. The construction and manner of applying the stays D will be hereinafter more fully described.

For convenience in referring to the intermediate wires C, I have designated the strands by numerals 1 to 11, inclusive, in Fig. 2.

After the wires are strung in horizontal position, given the requisite degree of tension, and the fence equipped with stays the intermediate wires C are brought into their diagonal positions as follows: Strand 2 and the top wire of strand 3 are brought close together at *c'*, but are not crossed, and are tied by wrapping them with wire. Then the next two lower wires, being the lower wire of strand 3 and the upper wire of strand 4, are brought together and tied in the same manner, and so on continuously until all of the wires of the intermediate strands, except wire No. 11, have been brought together and tied, the said ties all being in the same ver-



tical plane with the tie  $c'$ . Then the same wires will be brought together in like manner at  $c$  and tied, the distance from  $c$  to the stay being approximately the same as the distance of  $c'$  from the post. The ties  $c$  and  $c'$  will be made throughout the whole line of fence, and then the middle tie  $E$ , midway between the ties  $c$  and  $c'$ , will be made as follows: Strands 1 and 2 are brought together at a point approximately midway between the stay and the post. Then the top and bottom wires of strand 3 are brought together in like manner. Likewise the two wires of strand 4 are brought together, and so on throughout the remaining strands of the said intermediate wires  $C$ , whereby the pattern shown in Fig. 1 will be produced. The wires brought together at these intermediate points  $c$ ,  $c'$ , and  $E$  will not cross or quite contact with each other, especially at  $E$ , but will be held in close proximity by means of wire-ties. Elastic ties  $E$  will be used on each pair of wires between each stay and post, which will allow the wires held by them to recede from each other when the contraction, due to a temperature lower than the normal, causes the wires to shorten up, and will bring them together again as soon as expansion, due to a higher temperature, increases the length of the wires. By this means a self-regulating tension for the wires of the fence is secured and one of the greatest annoyances and serious drawbacks to the practical utility of wire fences successfully overcome.

Attention is specially called to the fact that in the construction of my fence none of the wires forming the horizontal or diagonal strands cross each other at any point, nor do I twist the intersecting wires together. Hence I do not interfere in any way with the free longitudinal movement due to expansion and contraction of the wires, nor do I tie them in such a manner as will interfere with this movement. The tie shown at  $c$  is made by twisting an auxiliary wire around the adjacent diagonal strands, then carrying the wire down to the next lower pair of the intermediate wires, which have been brought together, as above described, and wrapping them with the tie-wire at their point of nearest approach, and so on in like manner to the bottom of the panel.

The connecting-wire between the wrappings serves to keep the diagonal strands from being spread apart and will generally be preferred at those approachments of the wires which come next to the stays  $D$  at the middle of the panel. The wrappings  $c'$  are made by winding the tie-wire around the adjacent wires in a similar manner as described for the ties  $c$ , but as this series of ties is next to the posts and the wires in consequence are more rigidly held together economy in material will be permissible and the auxiliary wire will be cut off after each tie instead of connecting the ties, as shown at  $c$ .

I will now describe the elastic tie  $E$ . This

tie will consist of a pair of coiled springs  $E'$ , in each of which the wire forming the outer end of the coil will be passed through the inside of the coil and through the adjacent member of the pair in like manner as shown at  $E^2$  in Fig. 3, and will terminate with the hook  $E^3$ , which engages the sides of the coil in the manner shown. The pair of coils will be placed on opposite sides of the two adjacent strands  $C$ , and the series of elastic ties will be held in vertical position by means of the stay rod or wire  $F$ , which is threaded through all of the coils. The fence-strands are passed between the extensions  $E^2$  and the stay  $F$  in such a manner as to form a lock, preventing the withdrawal of the strands from the tie. The drawings illustrate the construction so clearly that further description of the elastic tie is unnecessary.

The marginal strands  $B$  are desirable in order to give the fence a uniform finished appearance, and in order to make a perfect self-compensating fence I will use wire cables such as are well-known to commerce and which are in themselves self-compensating.

My stay  $D$  will be made from sheet metal, preferably from longitudinal strips or blanks in which the openings  $d$  and the slots  $d'$  and  $d^2$  are punched before the strip is bent into the V-shaped form which it has in its finished condition. In order to give additional rigidity and strength to the stay, the marginal flanges  $d^3$  will be formed as clearly shown in Fig. 4. The openings  $d$  will receive the strands  $C$  and the strands will be locked therein by means of the key-wire  $D^3$ , which is threaded down in front of the stay and between the stay and the strands. The horizontal end slots  $d'$  and  $d^2$  are to receive the marginal wires. The slots  $d'$  extend from the margin inwardly, while the slots  $d^2$  extend from the center line of the stay toward but not entirely through to the edge of the opposite side of the stay from the slot  $d'$ . Access to the slot  $d^2$  will be had through the vertical centrally-located slot  $d^4$ . The peculiar arrangement of these end slots forms a lock to prevent the removal of the marginal wires after the stay is in place on the fence.

Having thus fully described my invention, what I claim as new, and wish to secure by Letters Patent of the United States, is—

1. In a fence, the combination, with two posts and marginal cables at top and bottom of the fence connected at their ends to said posts, of a series of notched stays connected to said cables, an inside wire next to each cable and connected to said posts and stays, wires intermediate between said last-mentioned wires strung in primary pairs and connected with the posts and stays and brought together in secondary diagonal pairs and fastened without crossing or being twisted at two points between each stay and post, and then spread apart between said fastenings, and each wire secured by means of an elastic tie as and for the purposes specified, to its



next adjacent wire throughout the entire series of wires intermediate of the marginal cables.

2. In a fence, in combination with the posts 5 and stays, a series of wire strands forming the body of the fence, some of said strands being arranged in diagonal pairs, the strands of each of said diagonal pairs being brought close together but without touching each other and being fastened together by means 10 of ties, one of which for each pair of wires consists of a pair of springs linked together and placed, one on each side of the two wires to be joined whereby the two wires can approach and recede from each other to suit the 15 change in the length of the strands due to expansion or contraction, substantially as described and for the purposes specified.

3. In a fence, the combination, with the 20 posts A and the stays D having the parallel marginal cables secured to said posts and stays, of the intermediate wires C arranged in diagonal pairs substantially as described, the strands of said pairs being secured together by means of elastic ties, the elastic 25 ties E each consisting of a pair of springs linked together and between which the wires to be tied are placed and stay-rods F, all substantially as shown and specified.

30 4. In a fence, the combination with the posts A and the stays D having the parallel marginal cables B secured thereto, of the intermediate wires C arranged in pairs the wires of which run diagonally with relation to each other, the elastic ties E connecting the diagonal 35 wires in pairs, the ties c joined in verti-

cal series by connecting-wires and the independent ties c', all substantially as described and specified.

5. In a fence, the combination, with the 40 posts A and the stays D, having the parallel marginal cables B secured to said posts and stays, of the intermediate wires C, arranged in diagonal pairs, substantially as described, the strands of said pairs being secured together by means of elastic ties, the elastic 45 ties E formed of two spiral springs, placed, one on each side of the wires to be fastened together, and having the outer ends of said springs bent back and inserted through the 50 inside of both of the springs and terminating with a hook to engage the opposite spring, and the stay-rods F, all substantially as shown and specified.

6. In a wire fence the stay D made from 55 sheet metal and V-shaped in cross-section, said stay having the side edges bent out to form the flanges  $d^3$  notches  $d$  to admit the fence-strands, the slots  $d'$  leading to the side edge and inside slots  $d^2$  having the central 60 slots  $d^4$ , leading to the end, the inner ends of the two horizontal slots located in the same horizontal and vertical planes, in combination with the wires of the fence and the locking-wire D<sup>3</sup> substantially as set forth. 65

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

THOMAS C. GREENE.

Witnesses:

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