

D. P. ANTHONY.
DIE FOR JOINING INTERSECTING WIRES.

No. 594,841.

Patented Dec. 7, 1897.

FIG. 2.

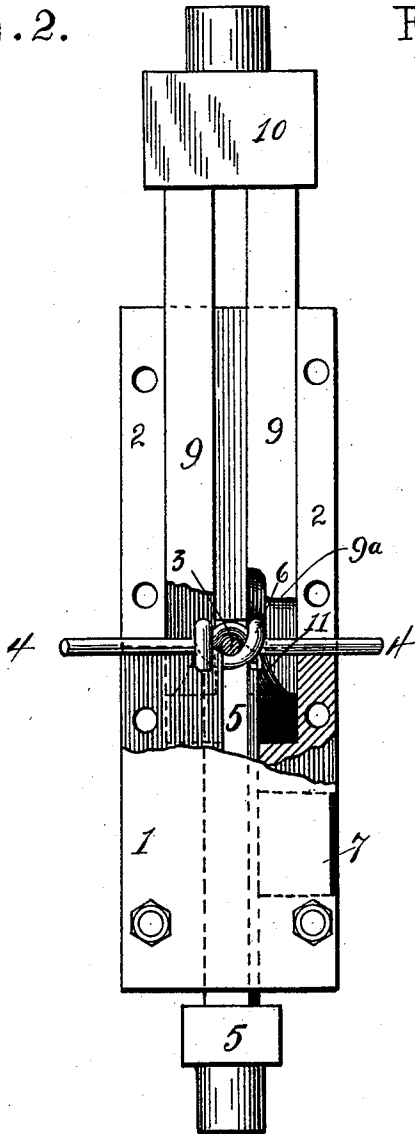


FIG. 1.

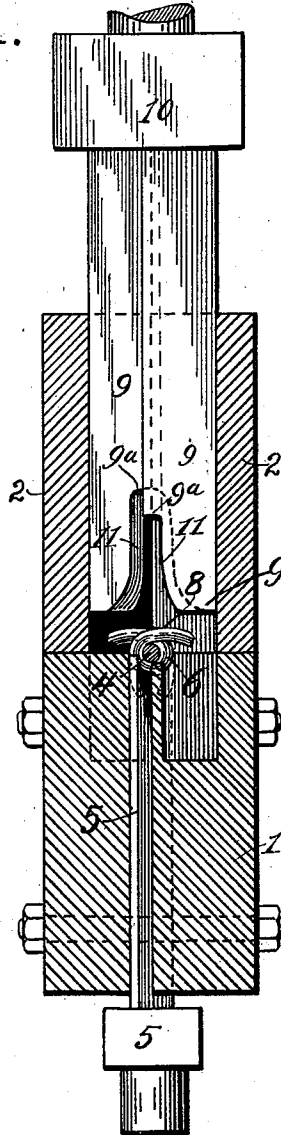


FIG. 3.



Witnesses:

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By Howard Hall,
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FIG. 4.

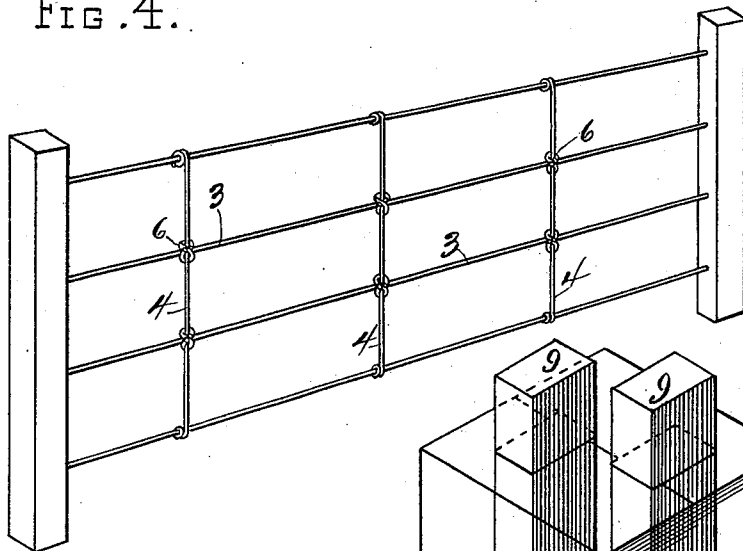


FIG. 5.

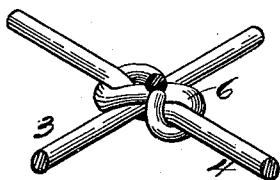


FIG. 6.

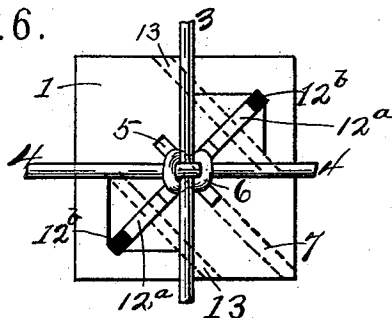
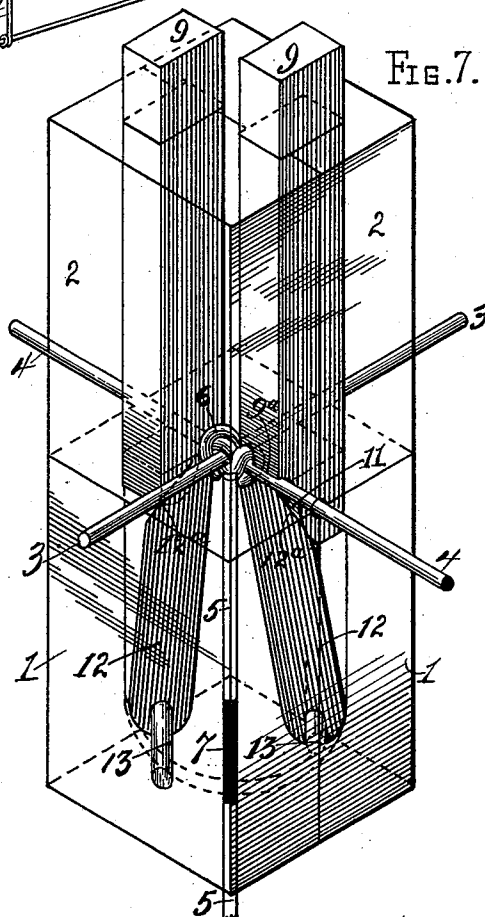


FIG. 7.



Witnesses:

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UNITED STATES PATENT OFFICE.

DANIEL P. ANTHONY, OF TECUMSEH, MICHIGAN.

DIE FOR JOINING INTERSECTING WIRES.

SPECIFICATION forming part of Letters Patent No. 594,841, dated December 7, 1897.

Application filed June 30, 1897. Serial No. 642,916. (No model.)

To all whom it may concern:

Be it known that I, DANIEL P. ANTHONY, a citizen of the United States, residing at Tecumseh, Lenawee county, Michigan, have invented certain new and useful Improvements in Dies for Wire-Fence Machinery, of which the following is a specification.

My invention relates to and its object is to provide a pair of dies for use in machines for the manufacture of wire fence, or, rather, machines for uniting in the shop the horizontal and vertical wires to be used in the field in the construction of wire fence.

In the accompanying drawings, made part hereof, Figure 1 is a central longitudinal sectional view of the dies hereinafter referred to with the plungers hereinafter referred to entire and showing a step in the operation of forming the tie hereinafter referred to; Fig. 2, a like view, partly in section, taken at a right angle to Fig. 1 and showing the next succeeding step in forming said tie. Fig. 3 represents the U-shaped wire loop from which the tie is formed; Fig. 4, a wire fence with the middle longitudinal strands and the uprights united by the kind of ties designed to be formed by my dies; Fig. 5, an enlarged perspective view of two wires united by my dies; Fig. 6, an end view of one of said dies, showing the cross-wires and finished tie in place; and Fig. 7, a perspective transparent view of my dies, showing the plungers, pivoted arms, cross-wires, and tie hereinafter referred to in place. In Figs. 1 and 2 for the sake of clearness the pivoted arms hereinafter referred to are omitted.

Like numerals indicate like parts throughout the drawings.

It should be understood that my dies are to be used in a suitable machine which will employ as many pairs of dies as there are horizontal wires to be united to the vertical wires. I have not shown or described this machine, as I intend to make it the subject of a future application for a patent. It is sufficient to say that it consists of suitable means for holding the proper number of dies and for actuating their moving parts with requisite speed and in proper succession.

In the drawings, 1 is a die, preferably stationary, opposed by a corresponding die 2, adapted to be moved to and fro, so that the

adjoining faces of the two dies shall meet. For convenience in manufacture and assembling of the parts each of these two die-blocks should be made in halves and united by bolts. The meeting faces of the two dies are each provided with two channels or grooves which cross each other at right angles at the center of the face of the dies. These channels coincide and are designed to clasp and hold the cross-wires. 3 designates the horizontal fence-wire and 4 the vertical wire. That part of the channel or groove just referred to cut in the face of die 2 and designed to take wire 4 is formed so that this wire rests against the face of this die only at its margins.

Through the center of die 1 moves longitudinally a flat plunger 5, having at its inner extremity a rounded notch to receive the rounded portion of the U-shaped loop 6. (Shown in Fig. 3.) The plunger 5 and its socket are disposed transversely at an angle—say forty-five degrees—to the lines of the cross-wires 3 and 4. The die 1 is slotted laterally, as at 7, (see Figs. 2, 6, and 7,) which slot intersects the socket in which moves the plunger 5. This slot 5 is of such dimension as to receive the loop 6, which is introduced flatwise into the slot, prongs foremost, and into the path of the plunger 5.

In the face of die 2 and directly opposite the ends of the prongs 6 when projected by plunger 5 are recesses having oppositely-inclined walls 8, the inclination being such that when the loop 6 is projected and held by its plunger 5 and the die 2 moves forward the inclined walls 8 will deflect the prongs of 6, as hereinafter described.

Through die 2 passes two plungers 9, united rigidly to and controlled by a single head 10. The inner extremities of these plungers are provided with oppositely-inclined beveled surfaces 11 11, and these plungers and their beveled surfaces are so arranged that in their forward movement they will engage and still further deflect the prongs of the loop 6, as hereinafter described. It will be understood that one plunger 9 passes upon one side of the wires 3 4, while the other plunger 9 passes upon the opposite sides of the wires, or, in other words, these plungers move in opposite angles of the cross-wires. In the sides of these plungers, next to the wire 4, are shoul-

ders 9^a, which at the end of the forward stroke of the plungers rest against and press the wire 4 against the wire 3.

The die 1 is slotted, as at 12^b, (see Fig. 6,) longitudinally, the slot being transversely at a right angle to the slot or recess in which moves the plunger 5, and in this slot on opposite sides of the center of the die are pivoted two flat arms 12 (see Figs. 6 and 7) upon pivots 13. The swinging extremities of these arms are beveled or sloped toward their ends upon their adjacent edges.

The operation of my device is as follows: Assuming that dies 1 are fixed rigidly in a suitable machine, that wire 3 lies in its groove upon the face of this die, that wire 4 lies in its groove upon the wire 3, and that the U-shaped loop 6 is fed into the slot 7 in front of the notched end of the plunger 5, the plunger 5 now advances, driving before it the loop 6, with its prongs foremost, causing the loop to bestride the two cross-wires 3 4. The plunger 5 stands fast, while the die 2 moves into contact with the die 1, the two cross-wires now fitting into the cross-grooves in the meeting faces of the dies. As the die 2 moves forward the projecting prongs of the loop come in contact with the inwardly-inclined faces of the recesses 8 and are deflected and bent inwardly in opposite directions, so that the prongs cross the wire 4 with their extremities parallel with the wire 3. (See Fig. 1.) Plungers 9 9 now advance and their inwardly-beveled surfaces 11 engage the projecting prongs of the loop 6, which lie in the path of the plungers, and thus the ends of the loops are each given a quarter-turn, so that the two prongs now lie on opposite sides of the wire 4 and at a right angle thereto. This movement of the plungers 9 9 squeezes the looped prongs of the tie 6 and shoulders 9^a on the plungers 9 so forcibly against the wire 4 that this wire is given a short bend or kink part way around the wire 3. This kinking of the wire 4 at the point where it crosses the wire 3 is permitted by the slight slack in the wire 4 due to the cutting away of its slot in the face of the die 1, above described. The prongs of the tie now project parallel with each other at a right angle to both wires, and it only remains to finish the operation by turning the two extremities of the tie so that they shall point toward each other. This is accomplished as follows: The beveled surfaces 11 of the plungers 9 9 while advancing come in contact with the opposing beveled surfaces 12^a of the pivoted arms 12 and, wedge fashion, force the tips of the arms inwardly toward each other. The tips of the arms in their travel encounter the extremities of the tie and bend and force the two ends, so that they shall point toward each other, and the operation is now complete. The tie when com-

pleted somewhat resembles the figure 8, and it firmly clasps the two cross-wires 3 and 4 together. It will be observed that the crimp in the wire 4 prevents its vertical movement, but permits longitudinal movement necessary to bring the wires into proper alinement and to permit contraction and expansion in the horizontal wire.

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

1. In a pair of dies adapted to hold the cross-wires of a wire fence, means for feeding a tie-wire to the point of intersection of said cross-wires, means for looping said tie-wire across said cross-wires, means for bending the two extremities of said tie backwardly upon opposite sides of both of said cross-wires, and means for bending the extremities of said tie inwardly toward each other, substantially as and for the purpose specified.

2. In a pair of dies adapted to hold the cross-wires of a wire fence, means for feeding a tie-wire to the point of intersection of said cross-wires, means for crimping one of said cross-wires upon the other at its point of intersection, means for looping said tie-wire across said cross-wires, means for bending the two extremities of said tie backward upon opposite sides of both of said cross-wires, and means for bending the extremities of said tie inwardly toward each other, substantially as and for the purpose specified.

3. In a die for a wire-fence machine, a block having a pair of recesses with inwardly-converging walls, and a pair of plungers having their neighboring edges at their extremity within the die beveled or sloped backwardly toward each other, substantially as and for the purpose specified.

4. A pair of dies for a wire-fence machine, comprising a block having a plunger therein adapted to receive, carry forward and hold a wire loop, another block, a pair of plungers therein adapted by means of their beveled surfaces to engage and deflect the projecting prongs of such wire loop, substantially as and for the purpose specified.

5. In a pair of dies for a wire-fence machine, a block, a plunger therein adapted to project and hold a wire loop, a pair of arms pivoted in said block, an opposing block, a pair of plungers therein adapted to engage and deflect the projecting prongs of such loop, and adapted to engage said pivoted arms, which in turn are adapted to engage and further deflect said projecting prongs, substantially as and for the purpose specified.

DANIEL P. ANTHONY.

In presence of—

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F. M. DOTSON.