

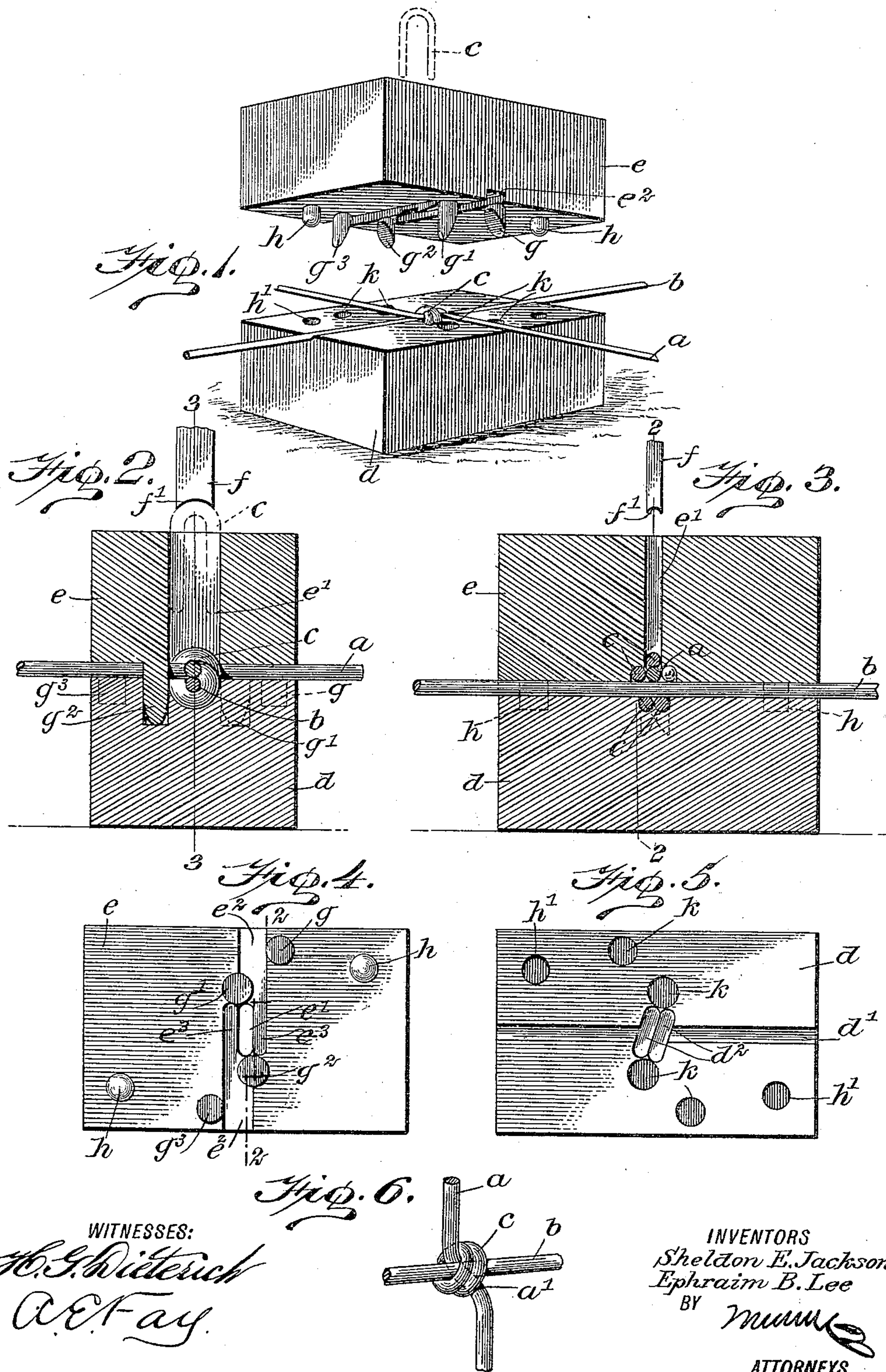
No. 817,570.

PATENTED APR. 10, 1906.

S. E. JACKSON & E. B. LEE.

WIRE WORKING DIE.

APPLICATION FILED JUNE 3, 1905.



UNITED STATES PATENT OFFICE.

SHELDON E. JACKSON AND EPHRAIM B. LEE, OF WESTON, MICHIGAN.

WIRE-WORKING DIE.

No. 817,570.

Specification of Letters Patent.

Patented April 10, 1906.

Application filed June 3, 1905. Serial No. 263,603.

To all whom it may concern:

Be it known that we, SHELDON E. JACKSON and EPHRAIM B. LEE, both citizens of the United States, and residents of Weston, in the county of Lenawee and State of Michigan, have invented a new and Improved Wire-Working Die, of which the following is a full, clear, and exact description.

Our invention relates to a die for working wire to form a joint or lock, and is especially adapted for forming fence-locks and for securing together any two crossing wires or the like.

The principal objects of the invention are to provide means for forming such a joint or lock in a vertical position and still have an angle in each of the vertical wires which it connects, therefore making it impossible for the lock to slide up and down.

A further object of the invention is to cause the lock-wire to wrap around the line and stay once and then again around the line-wire, with each end of the lock-wire lying against the stay-wire. This also assists in preventing sliding of the parts upon each other. Additional objects will be mentioned.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a perspective view showing the parts of a die provided with our improvements and separated from each other. Fig. 2 is a sectional view on the lines 2 2 of Figs. 3 and 4, showing the dies in position for forming the lock. Fig. 3 is a sectional view on the line 3 3 of Fig. 2. Fig. 4 is a bottom plan view of the upper main die. Fig. 5 is a plan of the lower die, and Fig. 6 is a front elevation of a lock constructed by the dies shown.

The invention will be described especially with reference to the manufacture of fence-locks such as that shown in Fig. 6. In this figure a stay-wire *a* crosses a line-wire *b* and is secured to it by a locking-wire *c*. The stay-wire is provided with a bend or offset *a'*, by means of which the lock and line wires are prevented from sliding along the stay-wire. The locking-wire passes around both the line and stay wire once and then a second time around the line-wire, each end of it lying against the stay-wire. This helps also in securing the device in position and for preventing its displacement. For making this lock two main dies *d* and *e* are preferably employed and an auxiliary die *f*, adapted to

pass through a slot *e'* in the upper main die. The lower die is provided in its upper face with a longitudinal groove *d'*, which is preferably straight in order to hold the line-wire *b*. The upper die is provided on its lower face with a transverse groove *e''*, having offsets *e'''* for the reception of the stay-wire *a*. This groove is wider than the stay-wire, and for the purpose of holding the stay-wire in the proper position and providing the bend *a'* therein a series of pins or studs *g*, *g'*, *g''*, and *g'''* are provided, projecting downwardly from the face of the upper die. The studs *g* and *g'''* are located with their edges coincident with the edges of the groove *e''* and on the outside thereof; but the studs *g'* and *g''* are located within the groove *e''*. The distance between the inner edges of the pins *g'* and *g''* and the opposite sides of the groove *e''* is sufficient to permit the wire *a* to pass through, but not sufficient to give it any appreciable amount of play. Consequently when the wire is passed through this groove between the pins it will be forced to assume a position with the bend *a'* passing across the center of the perforation *e'*. In order to guide the wire into this position, the inner surfaces of the pins *g*, *g'*, *g''*, and *g'''* are slanted. This is indicated most clearly in Fig. 1. Dowel-pins *h*, entering dowel-holes *h'*, are provided to guide the dies, and holes *k* are also provided in the upper face of the lower block to receive the pins *g*, *g'*, *g''*, and *g'''*.

The offset *e'''* of the groove *e''* is provided with curved edges corresponding to the shape which it is desired to impart to the upper portion of the locking-wire. These curved portions with the slot *e'* and the curved lower portion *f'* of the plunger *f* constitute three recesses for receiving the locking-wire and for giving it the desired shape, so that it will pass around the line and stay-wires in the manner described above. In the die *d* a pair of grooves *d''* are provided, which in shape are similar to the offset portions *e'''* of the groove *e''*, but are located at an angle to the groove *d'*, so as to afford two recesses for the reception of the locking-wire. It will be observed that when the wire *b* is placed in the groove *d'* and the wire *a* placed across it, so as to pass centrally over the depression *d''*, the lowering of the block *e* will cause the wire *a* to assume the bent form. If now a wire *c* in the form of a staple is forced in through the groove *e'* by means of the plunger *f*, its ends will be forced by the curved

portions of the grooves d^2 and e^3 to wrap around the wires a and b in the manner specified. This constitutes the final operation of forming the lock and illustrates one manner of
5 using our invention.

Having thus described our invention, we claim as new and desire to secure by Letters Patent—

1. A wire-working die having a groove
10 therein for receiving a wire, and means for bending said wire, said means comprising a series of pins located on two sides of the groove and adapted to engage the sides of the wire located in the groove.

15 2. A set of wire-working dies, comprising a main lower die having a groove therein for receiving a wire, a main upper die having a groove therein transverse to the first-mentioned groove for receiving a second wire,
20 and means for bending said second wire; said means comprising a series of pins located adjacent to the last-mentioned groove and adapted to engage the wire located in said groove.

25 3. A set of wire-working dies, comprising a main lower die having a longitudinal straight groove for receiving a wire, and an upper main die having a transverse groove provided with an offset portion for receiving a
30 second wire, said upper die being provided with a series of pins located adjacent to said second groove and adapted to engage the wire in the groove and form a bend therein, each of said pins being provided with a slanting
35 lower surface for guiding the wire into bending position, and the first-mentioned die having openings for receiving said pins.

4. A set of wire-working dies, comprising a main lower die having a longitudinal straight
40 groove for receiving a wire, and an upper main die having a transverse groove provided with an offset portion for receiving a second wire, said upper die being provided with a series of pins located adjacent to said
45 second groove and adapted to engage the wire in the groove and form a bend therein, each of said pins being provided with a slanting lower surface for guiding the wire into bending position, and the first-mentioned die
50 having openings for receiving said pins; said dies being provided with means for guiding them in straight lines toward each other.

5. A set of wire-working dies, comprising a main lower die having a longitudinal straight
55 groove for receiving a wire, and an upper main die having a transverse groove provided with an offset portion for receiving a second wire, said upper die being provided with a series of pins located adjacent to said
60 second groove and adapted to engage the wire in the groove and form a bend therein, each of said pins being provided with a slanting lower surface for guiding the wire into bending position, and the first-mentioned
65 die having openings for receiving said pins;

said dies also being provided with depressions having curved surfaces for bending a locking-wire about the two first-mentioned wires.

6. A set of wire-working dies, comprising a
70 main lower die and a main upper die having a groove provided with an offset portion for receiving a wire, said upper die also being provided with a series of pins located adjacent to the groove and adapted to engage the
75 wire in the groove and form a bend therein, each of said pins being provided with a slanting lower surface for guiding the wire into bending position, and the first-mentioned die having openings for receiving said pins. 80

7. A set of wire-working dies, comprising a main lower die and a main upper die having a groove provided with an offset portion for receiving a wire, said upper die also being
85 provided with a series of pins located adjacent to the groove and adapted to engage the wire in the groove and form a bend therein.

8. A set of wire-working dies comprising a die having a groove for receiving a wire, and a second die having a groove provided with
90 an offset portion for receiving a second wire, said second die being provided with a series of pins located adjacent to said second groove, each of said pins being provided with a slanting lower surface, and the first-mentioned
95 die having openings for receiving said pins.

9. A set of dies comprising a die having a groove provided with an offset portion on each side of the groove for receiving a wire, and a second die having two grooves located
100 at an angle to the said offset portion.

10. A set of dies comprising a die having a groove provided with an offset portion on each side of the groove for receiving a wire, and a second die having two grooves located
105 at an angle to the said offset portion; said offset portions and grooves having curved surfaces at their ends to bend the wire into approximately circular form.

11. A set of dies comprising a die having a
110 groove provided with an offset portion on each side of the groove for receiving a wire, a second die having two grooves located at an angle to the said offset portion, said first die having a perforation from its main groove between said offsets, and a third die adapted to operate in said perforation. 115

12. A wire-working die having a groove, an offset on each side of the groove, and a pin located partly to one side of each offset with
120 its side projecting part way into the groove.

In testimony whereof we have signed our names to this specification in the presence of subscribing witnesses.

SHELDON E. JACKSON.
EPHRAIM B. LEE.

Witnesses:

H. C. RETAN,
D. W. KNAPP.