(No Model.)

# D. P. CLARK.

## DIE FOR BENDING EYES FOR ELLIPTICAL SPRINGS.

No. 285,231. Patented Sept. 18, 1883.

*Fig. 1.*

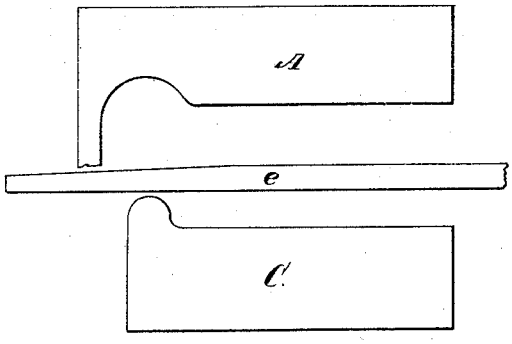



*Fig. 3.*

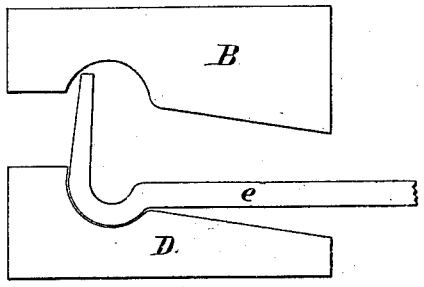



*Fig. 2.*

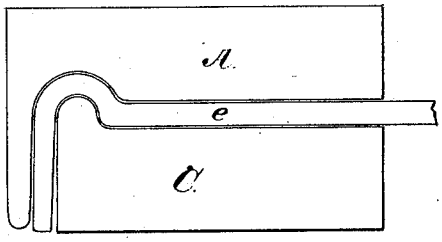



*Fig. 4.*

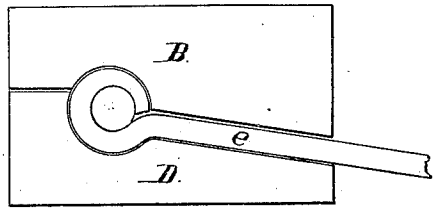



*Fig. 5.*

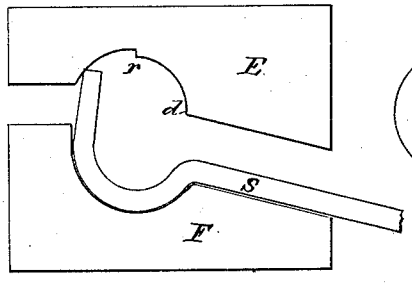
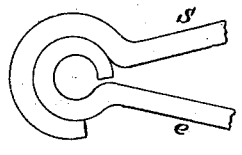



*Fig. 6.*




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# UNITED STATES PATENT OFFICE.

DALLAS P. CLARK, OF JERSEY CITY, NEW JERSEY, ASSIGNOR OF ONE-HALF TO RICHARD VOSE, OF NEW YORK, N. Y.

## DIE FOR BENDING EYES FOR ELLIPTICAL SPRINGS.

SPECIFICATION forming part of Letters Patent No. 285,231, dated September 18, 1883.

Application filed February 16, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, DALLAS P. CLARK, of Jersey City, in the State of New Jersey, have invented an Improved Die for Use in Manufacture of Eyes for Elliptic Springs, of which the following is a specification, reference being had to the following drawings.

Figure 1 is a side elevation of my improved dies for forming the joints of elliptic springs. Fig. 2 represents the same when closed, having formed the first bend or operation on male leaf of said springs. Fig. 3 represents the dies for the second operation in forming the ends of said male leaf, and Fig. 4 represents the same dies when closed and having completed the end of male leaf. Fig. 5 represents the dies for the second or last operation in forming the ends of female leaves of said elliptic springs. Fig. 6 represents a section of one of the joints of springs formed on my dies.

The object of my invention is to form the joints of elliptic springs uniformly, rapidly, and without the use of a mandrel over which to form them, as has been done heretofore. I also form the ends complete at a single heat of the iron by mechanical power by means of a press provided with sets of my improved dies, in place of physical force in forming them by hand, as done heretofore.

The practical operation and utility of my improvements will be more fully comprehended by reference to the drawings forming part of this specification, in which like letters indicate like parts.

A power-press is provided with two sets of dies, Figs. 1 and 3. The dies A and B are placed in the top or movable head and the dies C and D in the lower and stationary bed of the power-press, the two sets being placed side by side, with small space between them.

A piece of steel, *e*, being prepared to have the ends for joints of springs formed, is placed between the open dies, as seen in Fig. 1, and when the dies have been closed the steel *e* is bent to the shape shown in Fig. 2. At the return-stroke and opening of the dies the steel *e* is placed in the second set of dies, as seen in Fig. 3, which dies, when closed, produce the shape and completion of one end of male leaf of spring, as shown in Fig. 4. The same operation is repeated on the opposite end and each successive male leaf of springs until such number as may be desired at a time has been formed. The first set of dies is then removed and a second set in like manner placed in the press for forming the female leaf of said elliptic springs. The dies performing the first operation are similar in shape to those in Fig. 1, with the exception of the curved parts being larger, so as to form the shape to the steel S shown in Fig. 5. On the return-stroke, and upon the opening of the dies, the steel S is placed between the dies E and F, as shown in Fig. 5. The said dies being closed, the end *t* of steel S comes in contact with the notch *r* on the die E, an opening from *r* to *d* being left in the circle, so as to admit of the end of the male leaf being placed inside, as shown in Fig. 6, in which the male and female leaves are placed together, in the usual manner.

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

1. The dies A and C, so shaped as to form the first bend on the steel *e*, as shown in Fig. 2, in combination with the dies B and D, for perfecting said eye, constructed as described, and for the purpose specified.

2. The die E, with its notch *r*, in combination with the dies F and A and C, constructed as described, and for purposes specified.

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Witnesses:
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