

(No Model.)

C. T. SCHOEN.

DIE FOR MAKING ELLIPTIC SPRINGS.

No. 257,080.

Patented Apr. 25, 1882.

Fig. 1.

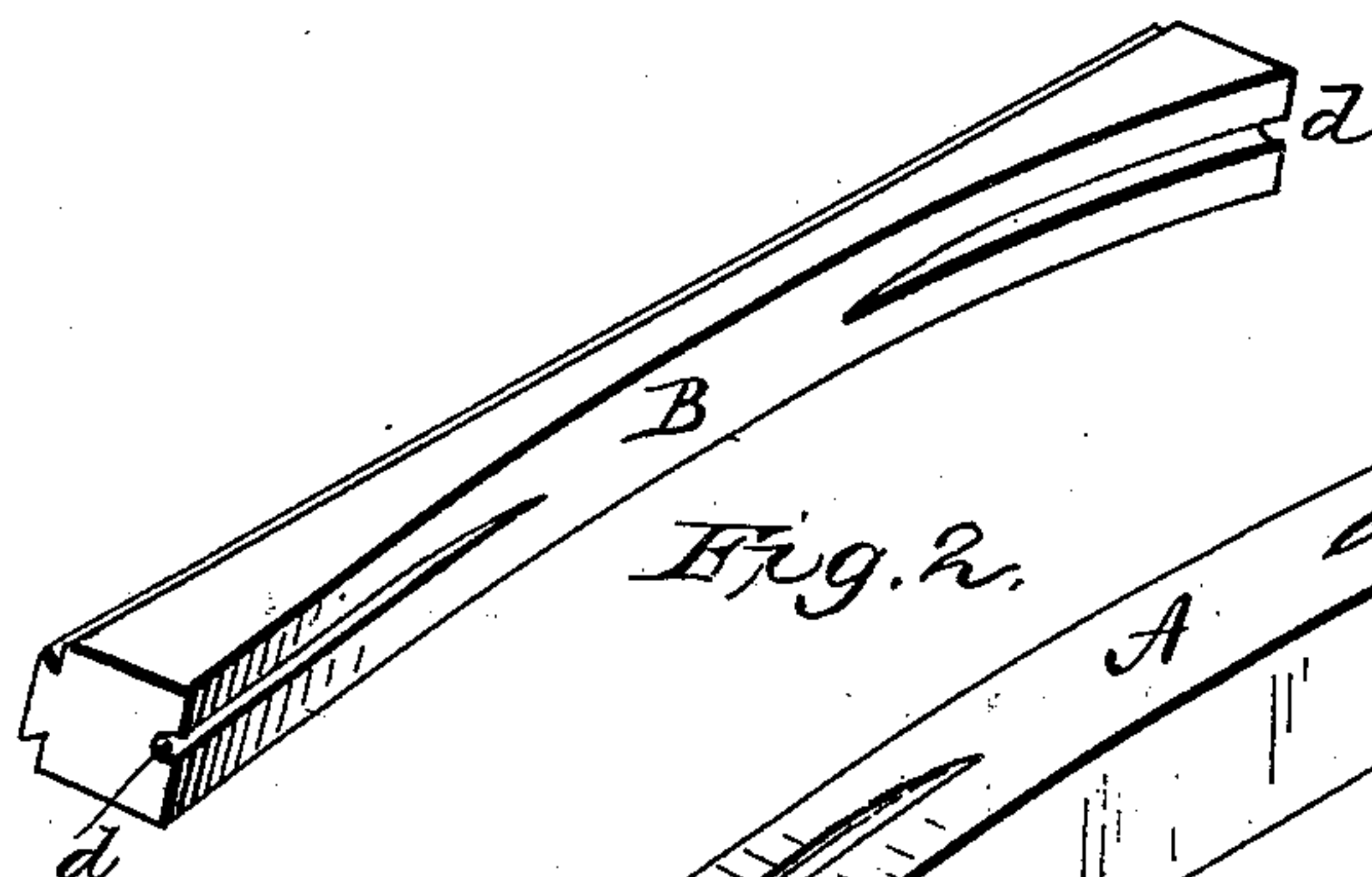
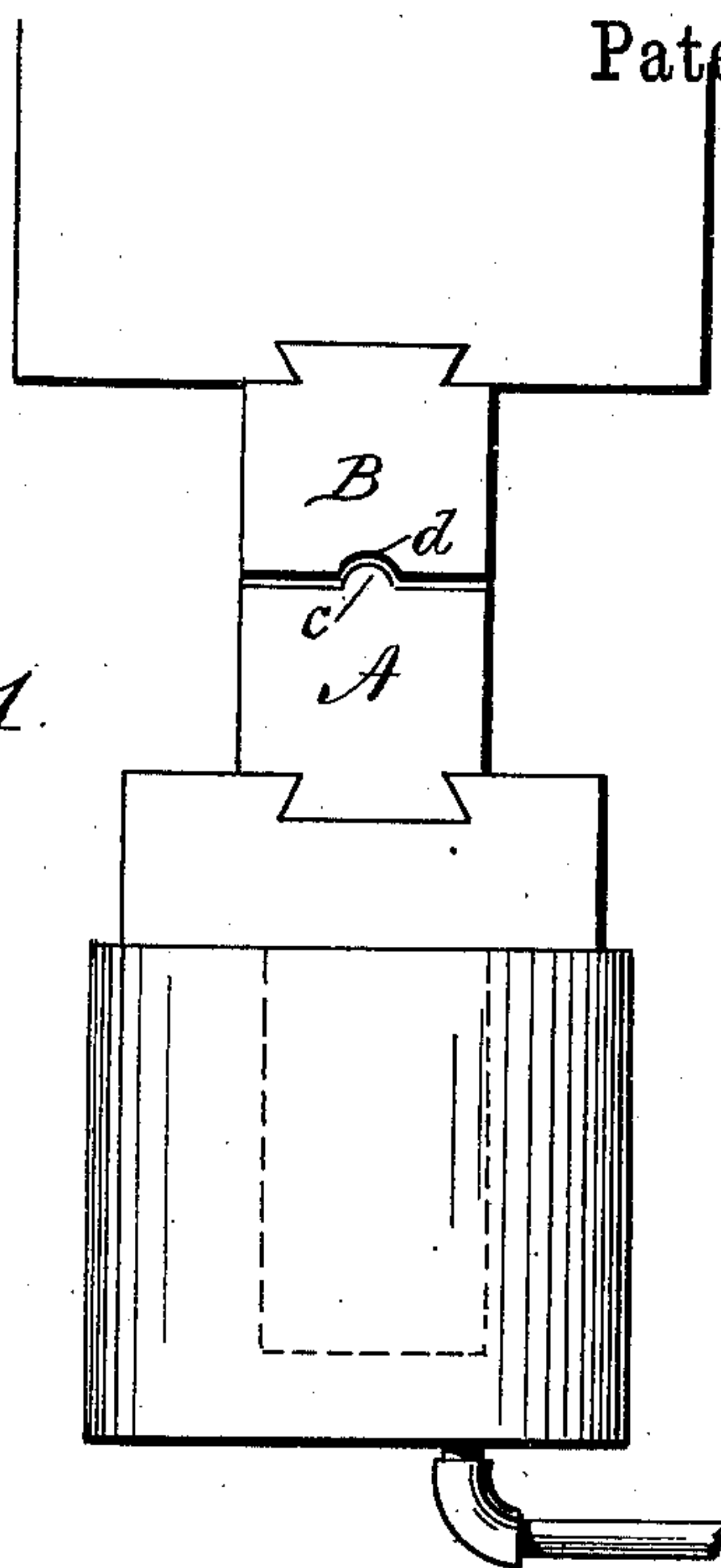


Fig. 2.

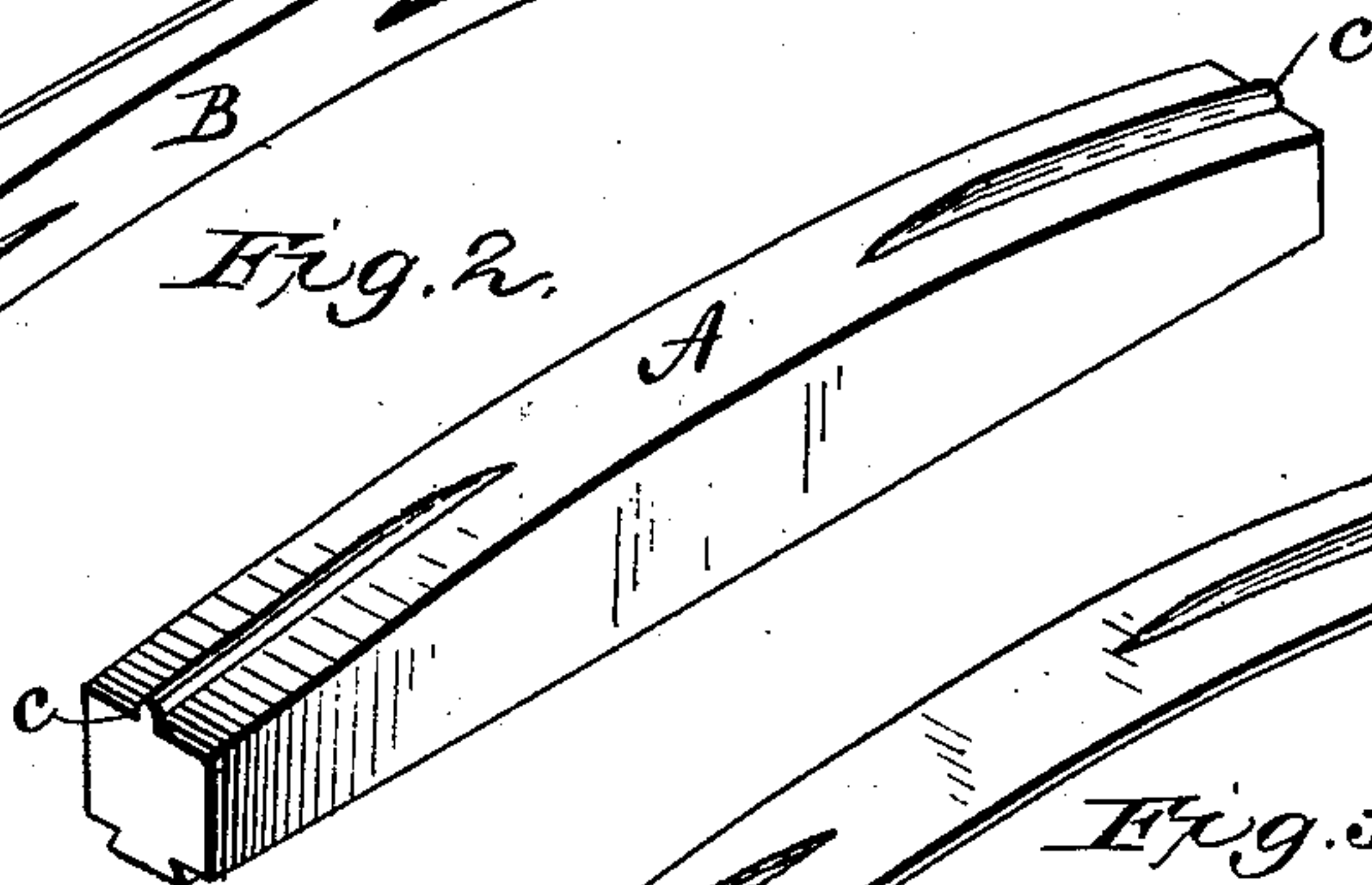
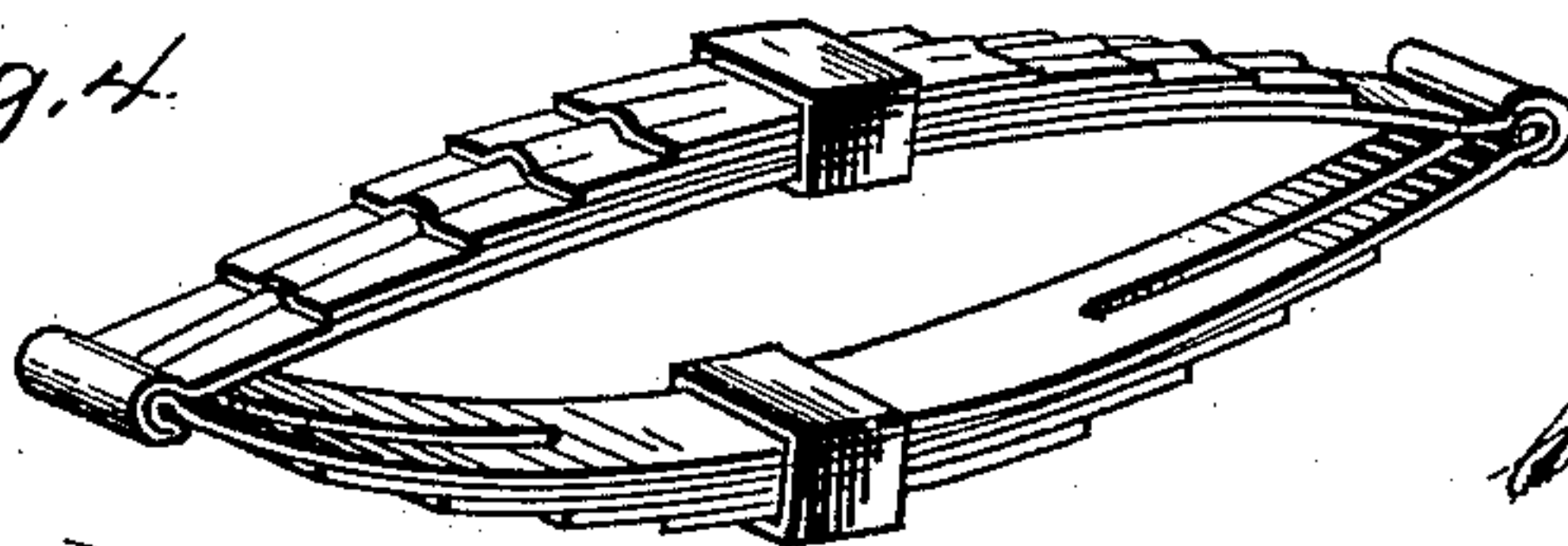


Fig. 3.

Fig. 4.



Witnesses,
F. L. Ouraud,
Chas. Williamson.

Inventor:
Charles T. Schoen
by John J. Halsted, Esq.
Atty.

UNITED STATES PATENT OFFICE.

CHARLES T. SCHOEN, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF
ONE-HALF TO CHARLES SCOTT, OF SAME PLACE.

DIE FOR MAKING ELLIPTIC SPRINGS.

SPECIFICATION forming part of Letters Patent No. 257,080, dated April 25, 1882.

Application filed December 15, 1881. (No model.)

To all whom it may concern:

Be it known that I, CHARLES T. SCHOEN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain
5 new and useful Improvements in the Manufacture of Elliptic Springs; and I do hereby declare that the following is a full, clear, and exact description of the invention, which will enable others skilled in the art to which it apper-
10 tains to make and use the same, reference being had to the accompanying drawings, and to letters of reference marked thereon, which form a part of this specification.

The leaves of elliptic or semi-elliptic springs
15 when grooved or ribbed have heretofore been shaped and grooved, so far as I am aware, by bending them to shape at one operation, grooving one end of the leaf at another operation, and grooving the other end by still another
20 or third operation; and it has been usual first to form the main leaf to a pattern of proper shape, and then to form each succeeding leaf to or on the one on which it is to lie, the formed one being cold, and the one to be formed be-
25 ing hot.

My invention consists in an improved construction of dies, whereby instead of requiring, as heretofore, so many operations and heat-
30 ings, each leaf may at one heating and by a single operation be formed into its desired bent or arched shape, and be also ribbed or grooved in each of its ends.

Figure 1 illustrates in front elevation a pair
35 of dies for practicing my invention, and a hydraulic press is shown for operating one of the dies; but any appropriate drop or screw press or power hammer or other power may be used, and the upper or lower die may be movable, or both, if desired. Fig. 2 is a per-
40 spective view of the dies; Fig. 3, a leaf or plate as it comes from the dies, and Fig. 4 a complete spring with its ribs or grooves as made by my process.

The dies A and B are made the one convex
45 and the other concave, and with their operative surfaces conforming to each other, the convex one having on its top surface a central rib, *c*, at each end, and the die B has a corresponding groove, *d*, at each end, so that

when the machine is operated to act upon the
50 steel which is to be converted into a leaf of a spring the dies shall by one action shape or bend the spring to its arch form and at the same time strike up the rib or groove at each end, thus by a single action and at a single
55 heating of the steel forming and ribbing the leaf complete.

By this invention it will readily be seen that the cost of manufacture and of labor is very greatly reduced, and the fact of needing to
60 heat the metal only once in practicing my new invention is of great importance, as it is an established fact that frequent heating of steel is injurious to it and impairs its quality, and every separate heating requires a separate
65 handling and manipulation, if not separate machines also, for the different steps, and each of the separate steps would require as much time as is needed to make the complete leaf
70 by my process.

The groove or rib, when so desired, may be
put into the leaf throughout its whole length by making the dies respectively with a con-
tinuous rib and groove.

It will be evident that in operating on leaf-
75 springs already bowed or bent to the required curve my apparatus would make the groove or rib in both ends, as above described.

I am aware that springs have been made
80 with a rib or groove in the ends, but I do not desire to claim broadly a spring having this feature; but I am not aware that the ribs or grooves have been made in both ends of the
85 leaves of elliptic springs at one act and simultaneously; nor am I aware that the bow or bend and the ribs or grooves have all been made at one operation.

I claim as new—

The improved dies described, having curved
90 faces, the one grooved and the other ribbed, substantially as set forth, and adapted for shaping the plate and for making the grooves or ribs therein by one operation.

CHARLES T. SCHOEN.

Witnesses:

CHAS. M. LUKENS,
MILLER F. SHOCK.