

(No Model.)

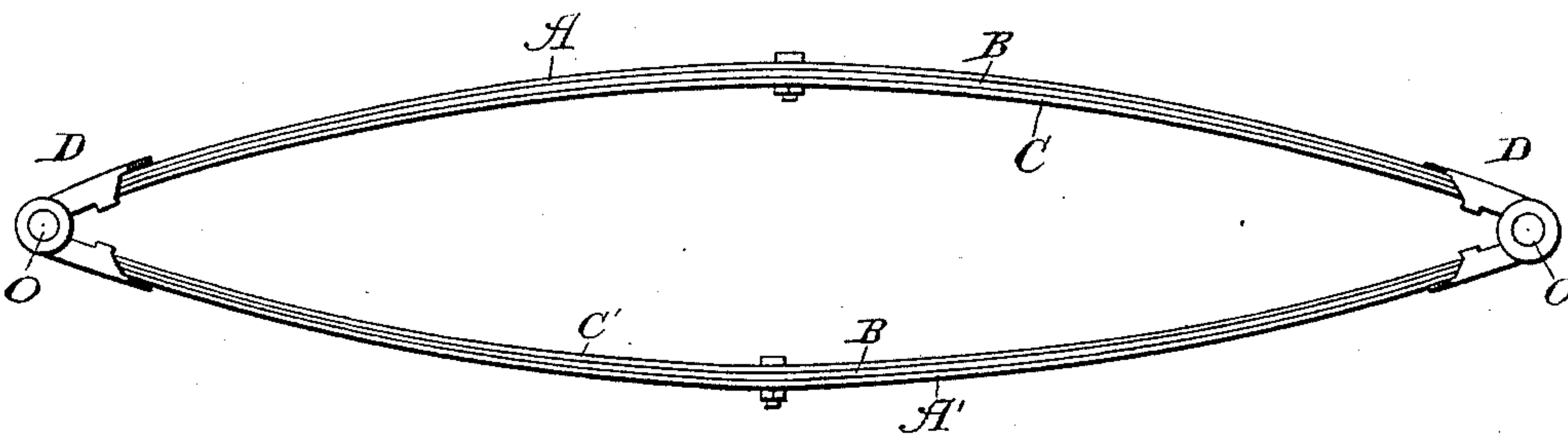
J. O. ALTICK.

ELLIPTIC SPRING.

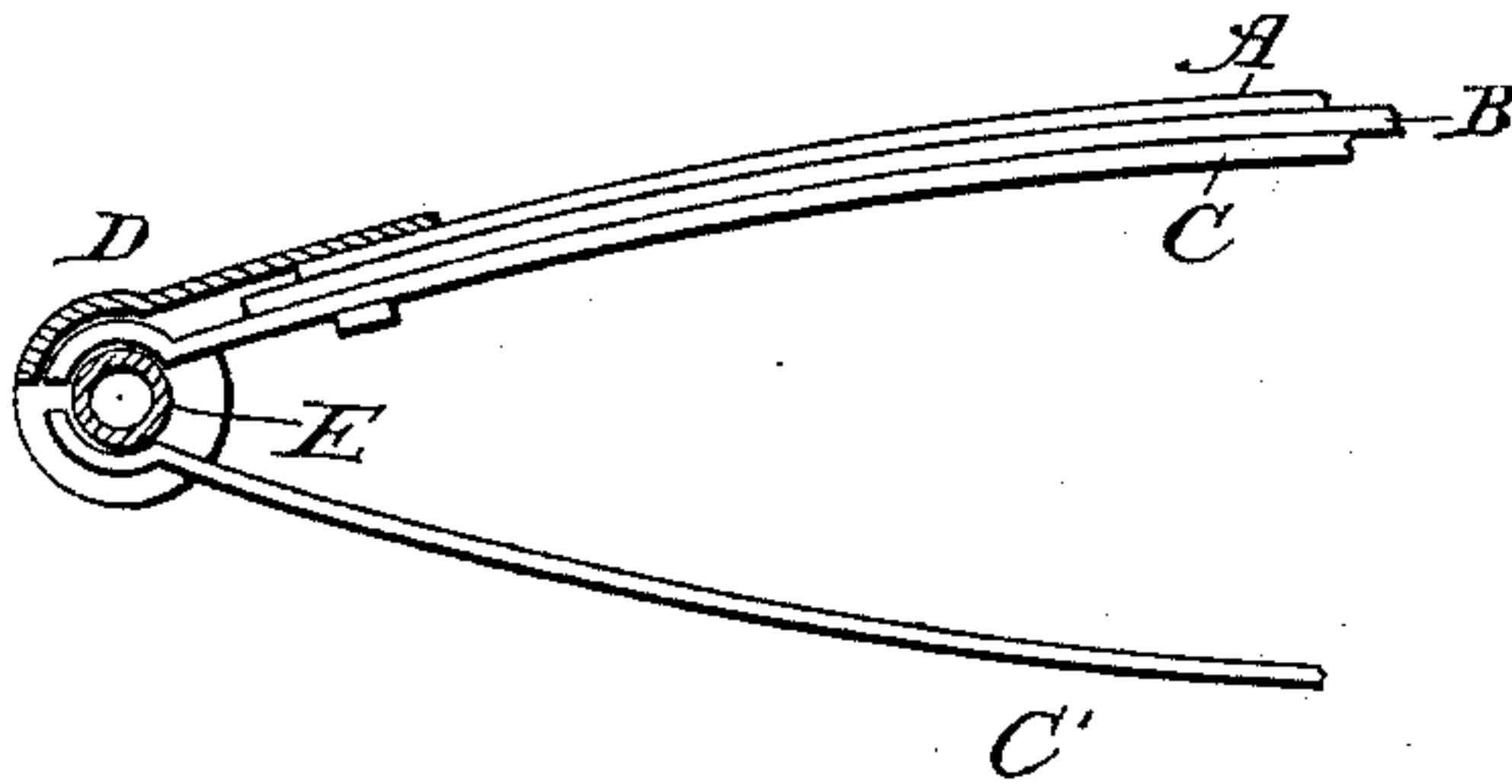
No. 348,710.

Patented Sept. 7, 1886.

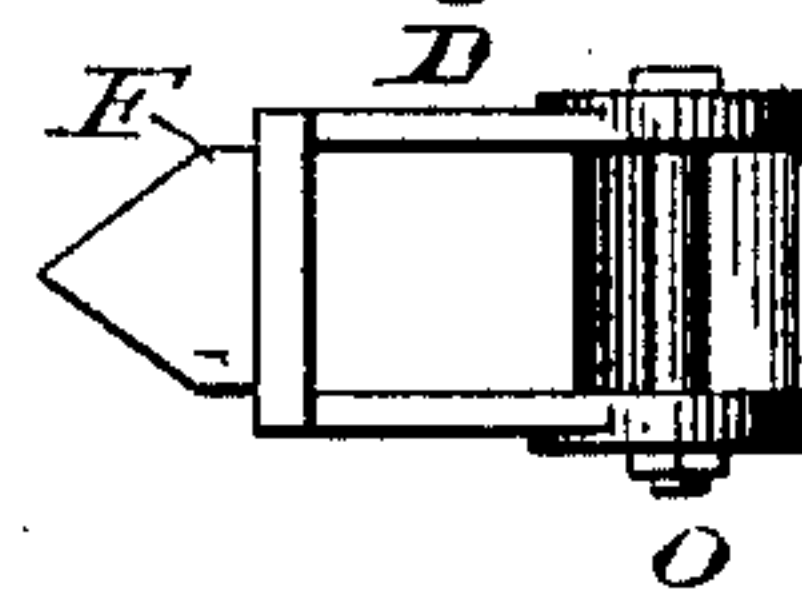
*Fig. 1.*



*Fig. 2.*



*Fig. 3.*



Witnesses:

Louis S. Reibold  
Leopold Leibold

Inventor.

James O. Altick  
By B. Pickering  
His atty.

# UNITED STATES PATENT OFFICE.

JAMES O. ALTICK, OF DAYTON, OHIO, ASSIGNOR OF ONE-HALF TO DANIEL WEAVER, OF SAME PLACE.

## ELLIPTIC SPRING.

SPECIFICATION forming part of Letters Patent No. 348,710, dated September 7, 1886.

Application filed November 18, 1885. Serial No. 183,192. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES O. ALTICK, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented a certain new and useful Improvement in 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 appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to improvements in elliptic springs; and it consists of two leaves of steel with an intervening leaf of hard wood, or all may be of steel with the upper and lower halves joined by clamps united by bolts, said clamps embracing the ends of the leaves.

The objects are to produce a light and cheap spring, which will be substantially united at the joints thereof. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a front view of the elliptic spring. Fig. 2 is a fragmentary enlarged view of one end. Fig. 3 is an under side view of the joint clamp or box.

C C' are steel bars, bent in proper form for an elliptic spring, the ends being bent to form a concavity conforming to the surface of the cylindrical thimble E, upon which said ends have a bearing. The relation of these parts in contact are shown at Fig. 2, where the embracing-clamp D is illustrated in section.

A A' are the external leaves of the spring, and B B' are intermediate leaves of hard wood, the whole being united by bolts at the center. Steel or other substance may be substituted for the hard-wood leaves. The upper and lower clamping-joints are alike, with the exception that the ears of the upper embrace those of the lower.

At D, Fig. 3, is an under view of the joint-clamp, of which F is a bar attached to the sides, with space beneath for the reception of the ends of the leaves. The ears are perforated for the bolt O, and beneath this bolt is a concavity corresponding to that of the curved ends of the internal leaves.

The parts of the spring are put together thus: Between the ends of the inner leaves are placed the thimbles E. Over these ends are placed the joint-clamps D, and these are connected by bolts, which pass through the ears and the hollow thimble. Then the other leaves are placed within the joint-clamps, and these leaves are all united by bolts at the center of the leaves, as is usual.

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

1. An elliptic spring with inner leaves having curved ends to embrace thimbles, the joint-clamps with ears for a bolt, concavity for the bent end of said inner leaves and bar integral thereof across the back end, to unite the halves of said spring by embracing the intermediate wooden and external steel leaves, substantially as set forth.

2. The joint-clamp D, having ears for the joining-bolt, concavity for curved ends of steel leaves and bar integral thereof across the back and to embrace the leaves composing a spring, combined with a thimble-bearing for the inner leaves, substantially as set forth.

In testimony that I claim the foregoing as my own I affix my signature in presence of two witnesses.

JAMES O. ALTICK.

Witnesses:

B. PICKERING,  
SUMNER T. SMITH.