

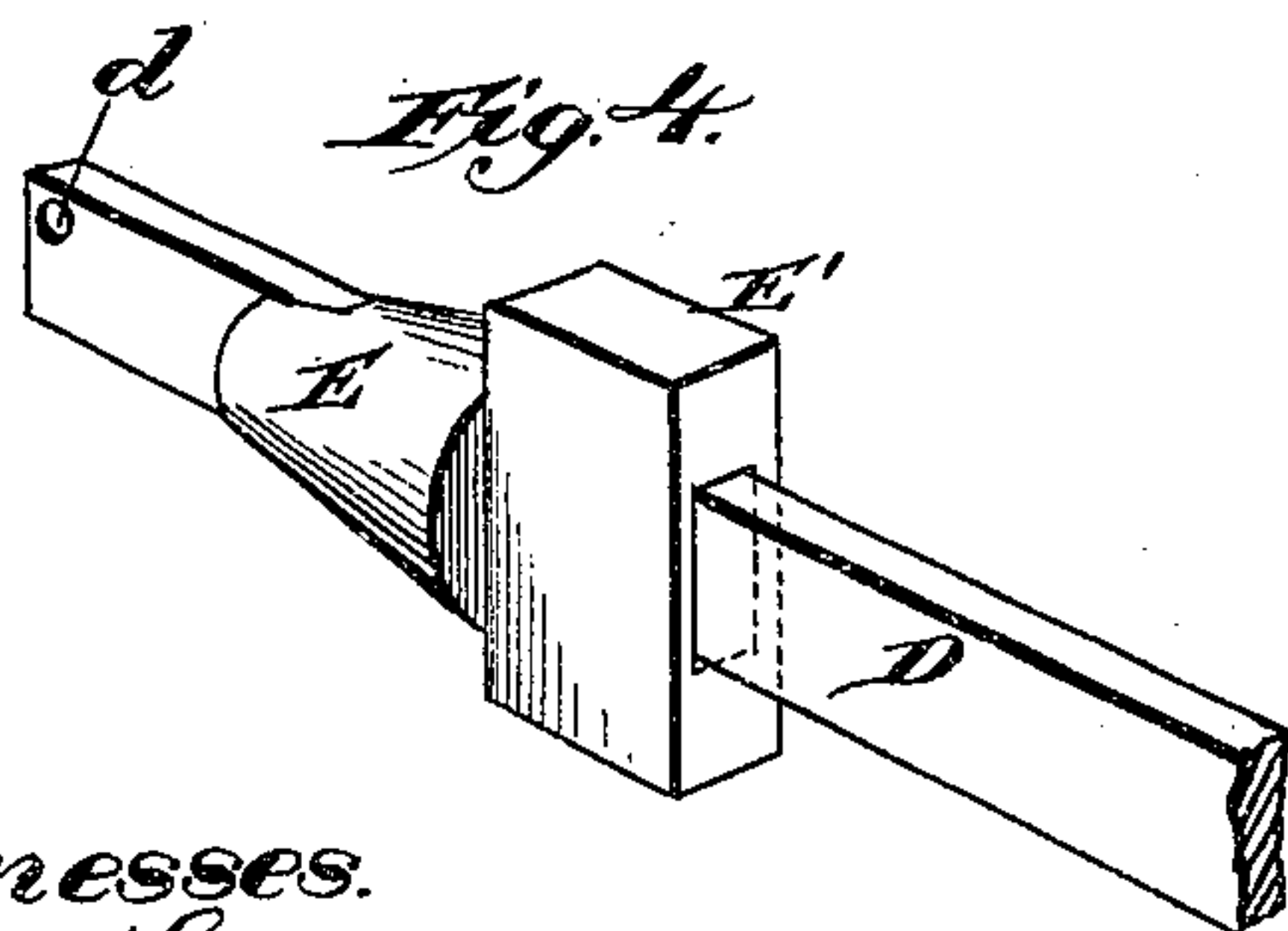
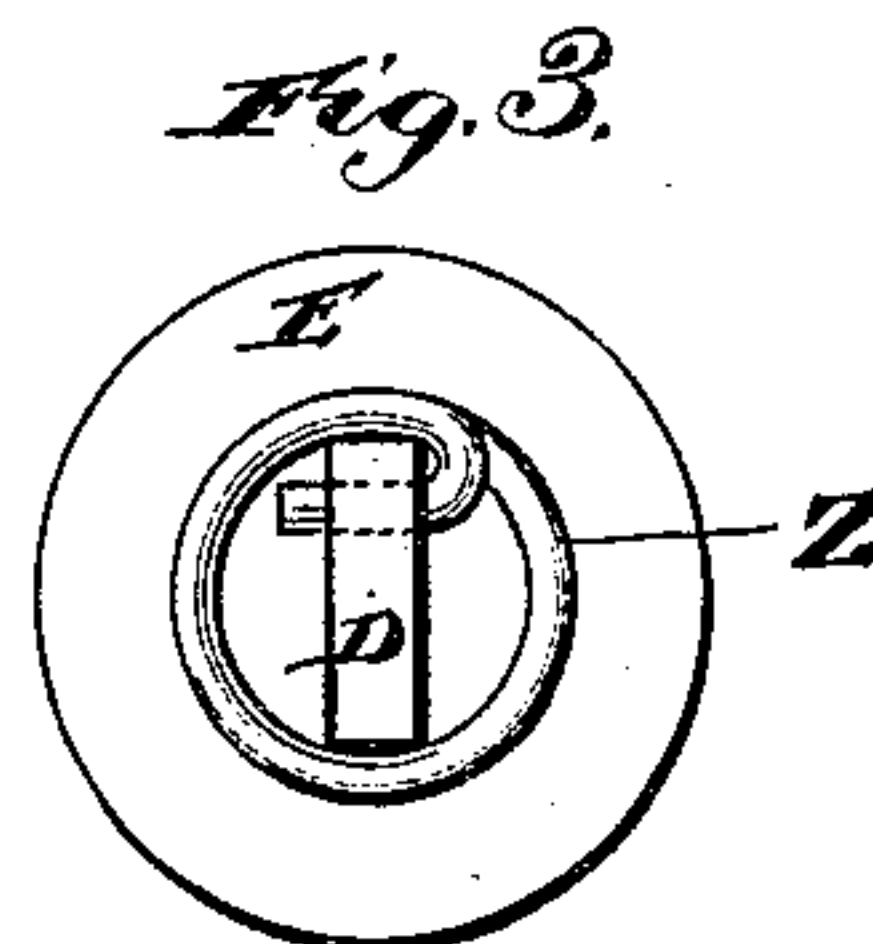
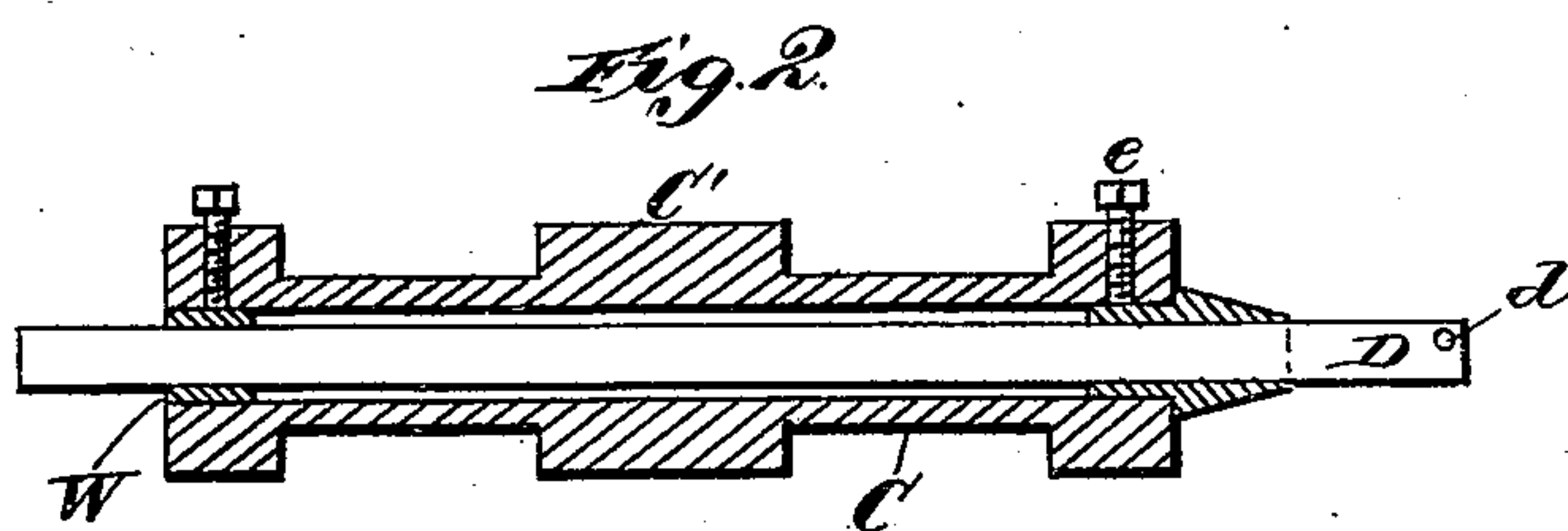
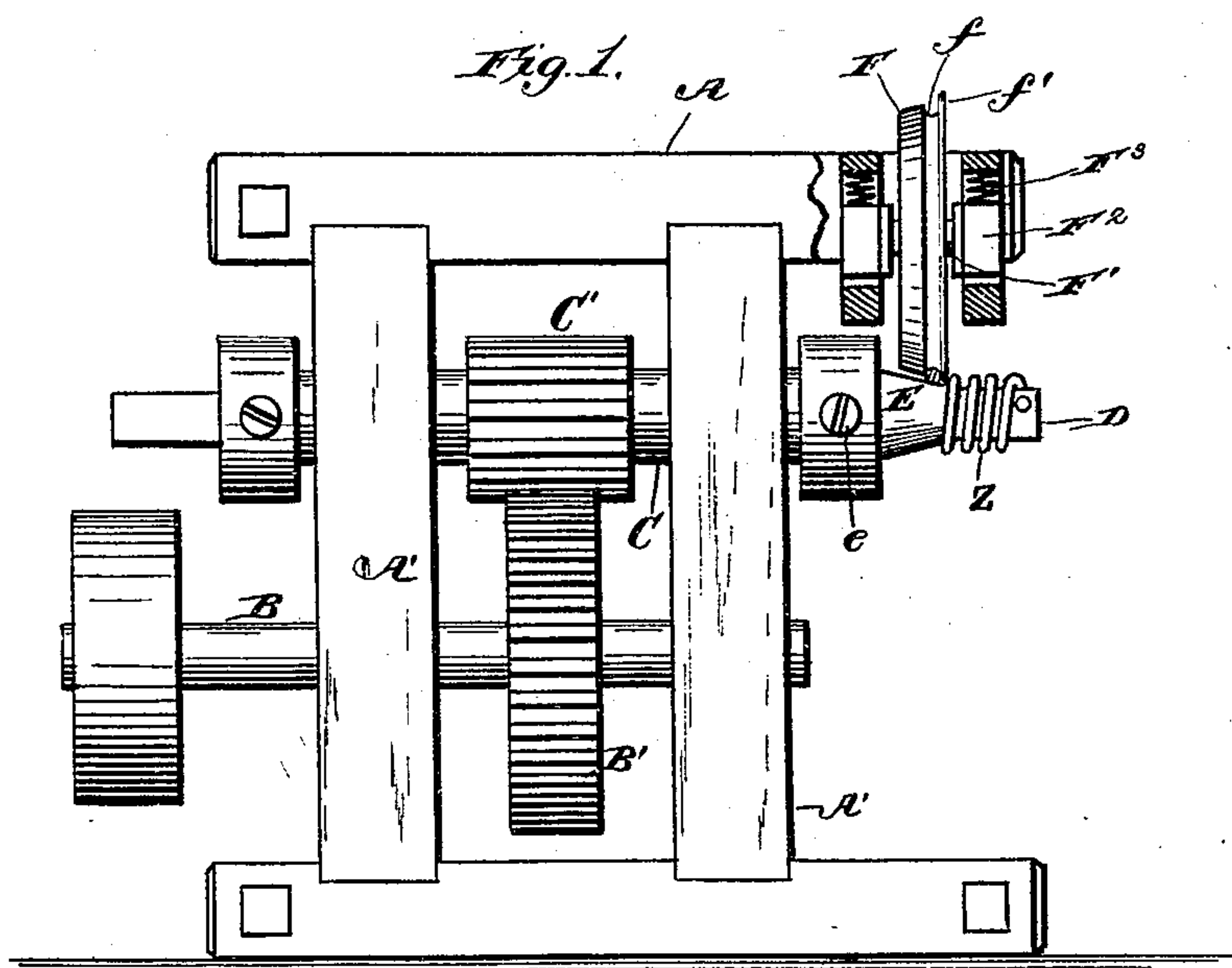
(No Model.)

E. F. LANDIS.

MACHINE FOR MAKING SPRINGS AND RINGS.

No. 258,586.

Patented May 30, 1882.



Witnesses.

Robert Everett.

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By

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UNITED STATES PATENT OFFICE.

EZRA F. LANDIS, OF LANCASTER, PENNSYLVANIA.

MACHINE FOR MAKING SPRINGS AND RINGS.

SPECIFICATION forming part of Letters Patent No. 258,586, dated May 30, 1882.

Application filed October 13, 1881. (No model.)

To all whom it may concern:

Be it known that I, EZRA F. LANDIS, a citizen of the United States of America, residing at Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Machines for Making Springs and Rings; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as 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 letters or figures of reference marked thereon, which form a part of this specification.

This invention relates to machines for making coiled springs and rings of all sorts; and it consists principally in the combination of an endwise-movable bar with a rotary forming-cone and pressure-wheel, or equivalent device, whereby one or more pieces of wire are wound into a coiled spring or a number of rings.

In the accompanying drawings, Figure 1 represents a front elevation of a machine embodying my invention. Fig. 2 represents a vertical section taken longitudinally through the bar, the cone, and the sleeve, hereinafter described. Fig. 3 represents an end view of the bar and cone with the attached wire partly wound into shape, and Fig. 4 represents a detail perspective view of the cone and bar.

Like letters represent like parts in the several figures.

A designates the frame of the machine, which affords bearings for the journals of driving-shaft B, carrying gear-wheel B', that meshes with a similar wheel, C', formed with or attached to tubular shaft or sleeve C, which turns in bearings on standards A' of said frame A. This tubular shaft or sleeve has a longitudinal central passage extending from end to end, and corresponding in shape to that of a flat bar, D, which is free to slide in said passage. One end of shaft or sleeve C is centrally recessed to receive an inner extension, E', of a truncated cone, E, which is held in place by a clamping-screw, e, that bears against said extension. These parts E E' are preferably cast together, and in any case the central passage of shaft C is extended through them, so that bar D can slide through both sleeve and cone. The cone is necessarily truncated to allow the protrusion of the bar D. This bar

may be prismatic in shape instead of flat; or it may be cylindrical and provided with a spline or feather. In any case the passage in which it slides must correspond sufficiently in shape to allow endwise motion of the bar, but compel it to rotate with the shaft or sleeve. The protruding end of said bar has a perforation, d, for the attachment of the wire Z, from which the spring is to be made.

F designates a pressure wheel or pulley, peripherally grooved at f to fit said wire, and provided with a guide-flange, f', which enters between the coils thereof. This wheel is arranged above cone E, and its shaft F' turns in bearings F², which are vertically movable, in order to allow a spring, F³, to force said wheel down upon said wire on the cone. Of course a weight may be substituted for the spring, or the wheel itself may be made so heavy that no other weight will be needed.

The construction of the bearings, the supporting-frame, and the driving and gearing devices may be largely varied.

The operation of the machine is as follows: The end of the wire being attached, as stated, to the end of sliding bar D, the rotation of said sliding bar with tubular shaft or sleeve C will necessarily cause the wire to wind in successive coils on the smaller part of cone E. The pressure of wheel F holds the coils tightly against the cone E and compels them to take the form desired, while the flange f' of said wheel slightly separates coil from coil, so that they may be formed into an open coiled or helical spring. As the coils cannot pass up the cone beyond pressure-wheel F without overcoming greater resistance than the inertia and friction of bar D, the successive coils force said bar farther and farther out of sleeve C, and are themselves crowded upon it one after the other. When the end of the bar is reached it drops from sleeve or shaft C with the helical spring wound upon it. Another bar may then be inserted in the said shaft or sleeve, or the same bar may be used again after having the spring taken therefrom.

To make rings, the coils are cut one from another and the ends are fastened together. The device may of course operate on more than one wire at a time, so as to make double or treble springs.

Instead of making the passage through the

tubular shaft correspond in shape from end to end with that of the sliding bar hereinbefore described, a collar or bushing, W, having a passage thus corresponding to said bar, may
5 be inserted in the end of said shaft opposite to the forming-cone, as shown in Fig. 2. This collar and the cone will then cause the bar to turn, the remainder of the shaft being of larger bore.

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

15 1. The combination of a rotating cone with a bar sliding through the same, but rotating therewith, said bar being adapted to the attachment of wire, substantially as set forth.

2. A rotating cone and a pressure-wheel arranged to bear against the coils of wire on said cone, in combination with a sliding bar that

turns with said cone, and to which the wire is 20 attached, substantially as set forth.

3. Pressure-wheel F, having groove *f* and guide-flange *f'*, in combination with rotating cone E and bar D, turning with said cone, but sliding endwise therein, substantially as set 25 forth.

4. Tubular shaft C, recessed at one end, in combination with cone E, having extension E', which sets into said recess, a detachable fast- 30 ening therefor, and a bar to which the wire is attached, and which slides in said parts C E, but turns with them, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EZRA F. LANDIS.

Witnesses:

FRS. L. HERR,
J. F. STAUFFE.