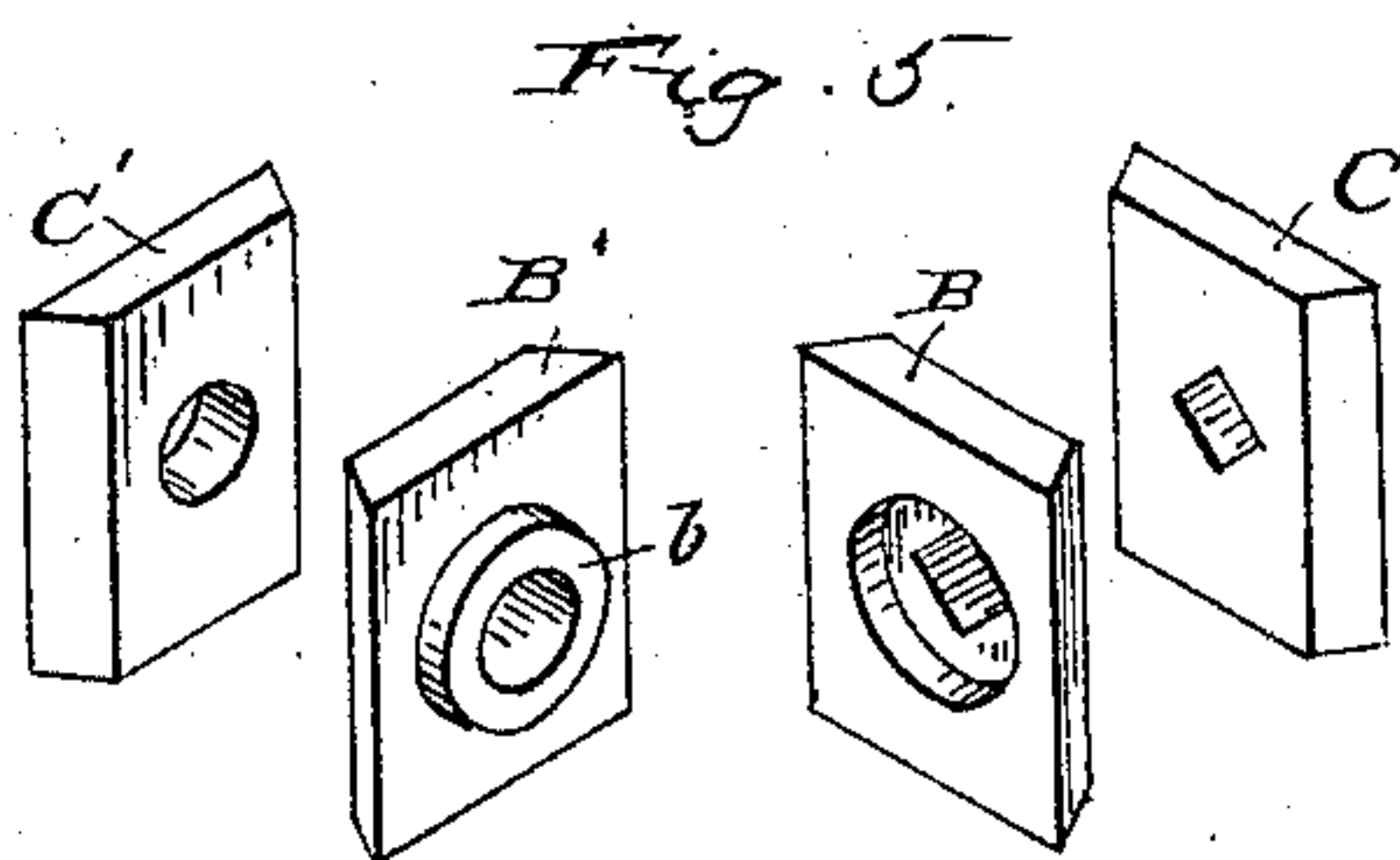
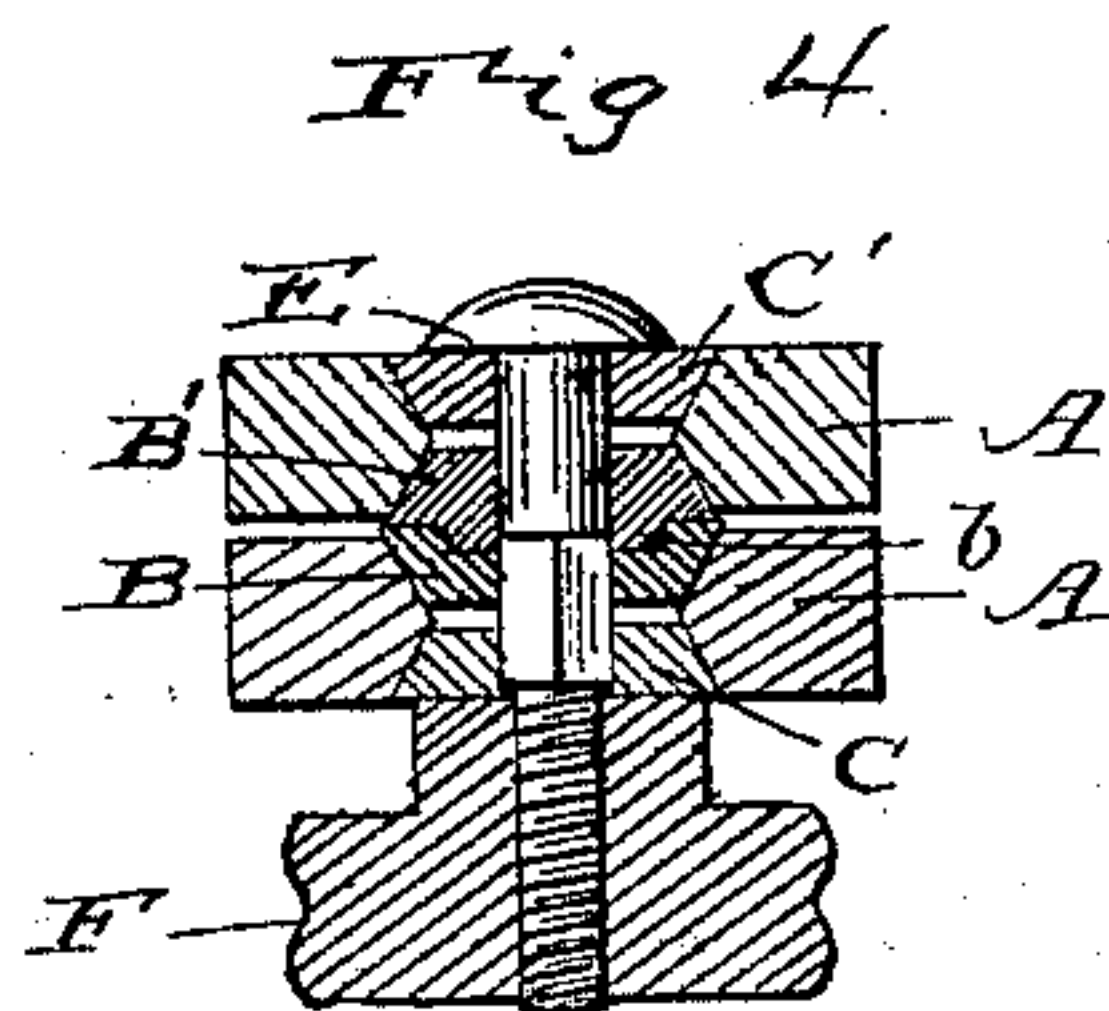
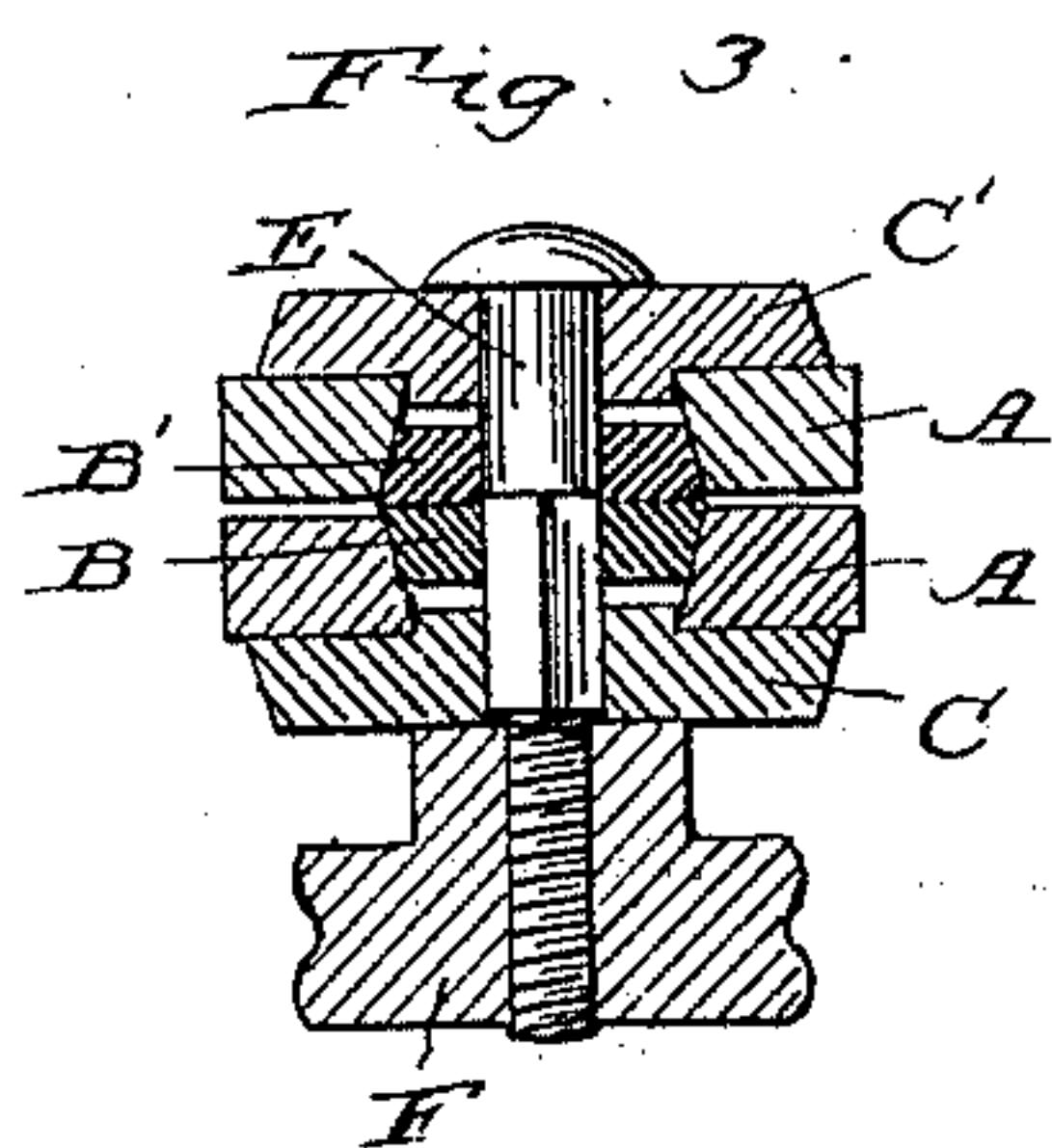
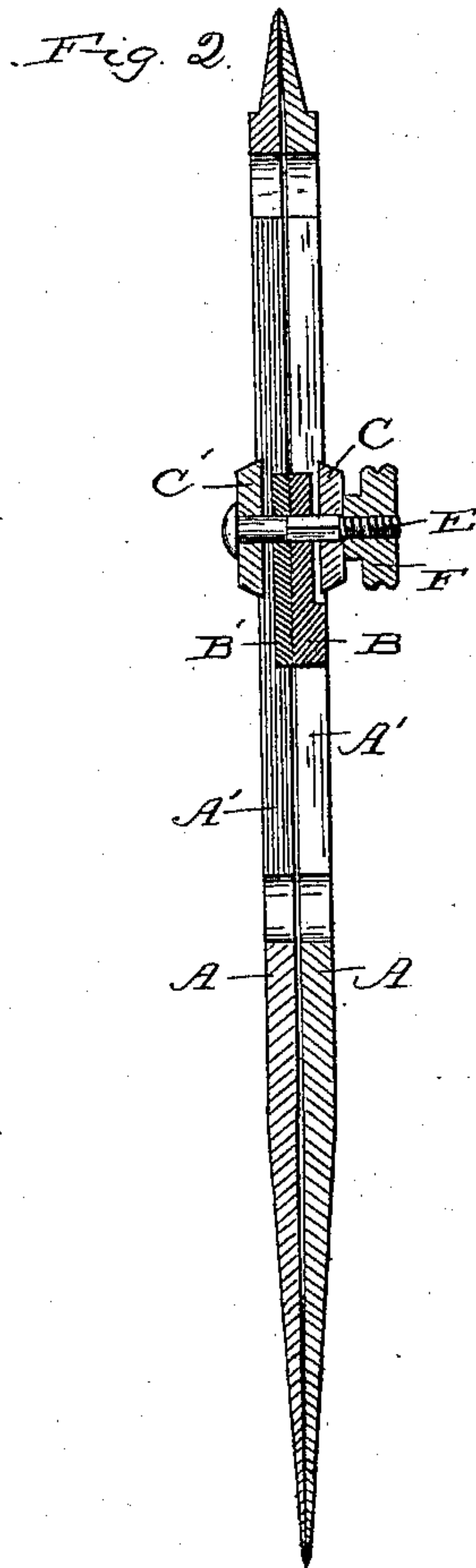
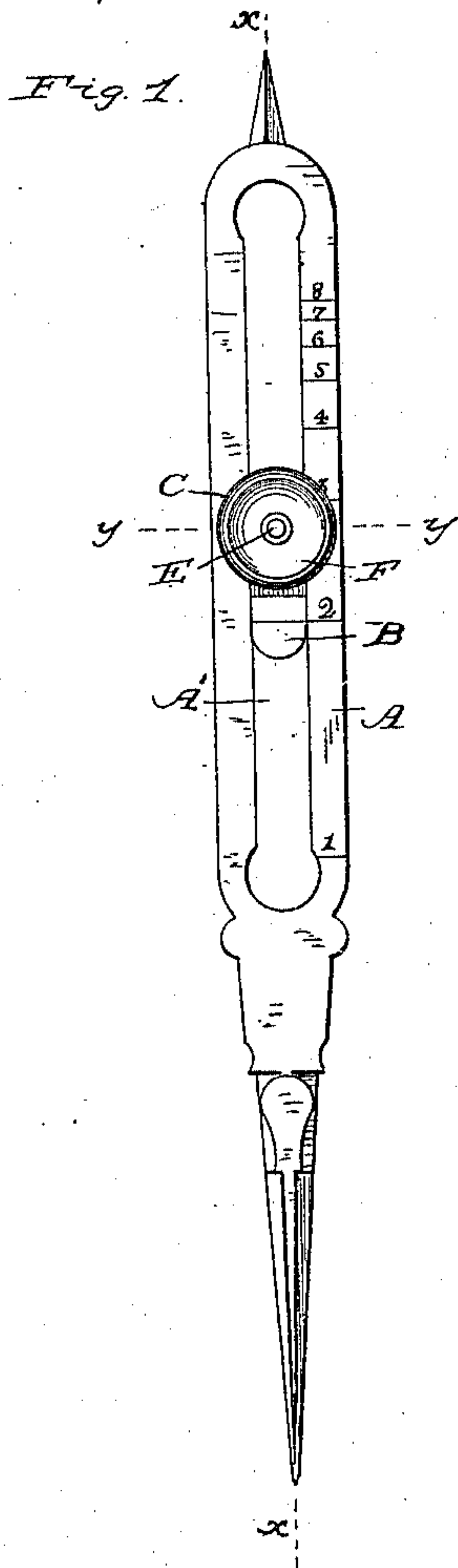


(No Model.)

H. N. LOW.  
ADJUSTABLE PIVOT JOINT.

No. 283,907.

Patented Aug. 28, 1883.



Witnesses:

A. J. Houghton  
L. B. Marshall.

Inventor:

Harry N. Low



# UNITED STATES PATENT OFFICE.

HARRY N. LOW, OF WASHINGTON, DISTRICT OF COLUMBIA.

## ADJUSTABLE PIVOT-JOINT.

SPECIFICATION forming part of Letters Patent No. 283,907, dated August 28, 1883.

Application filed May 3, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY N. LOW, a citizen of the United States, residing at Washington, in the District of Columbia, have invented certain new and useful Improvements in Adjustable Pivot-Joints for Drawing-Instruments, of which the following is a specification, reference being had therein to the accompanying drawings.

The object of my invention is to provide a joint for drawing-instruments, whereby two parts can be hinged or pivoted together at any desired point of their length. I am aware that a joint of the kind thus broadly described is old; but I have devised certain improvements in its construction, whereby the parts are each held more securely in their positions relative to the pivot, and, moreover, the friction between the pivoted parts when oscillated relatively to one another is materially lessened. This joint is particularly useful in proportional dividers, and I will illustrate and describe it as being applied thereto.

Figure 1 is a front elevation of a pair of proportional dividers. Fig. 2 is a vertical section on line *x x*. Fig. 3 is a cross-section, enlarged, on line *y y*. Fig. 4 is a similar section, showing further improvements in construction. Fig. 5 is a view showing some of the details of Fig. 4.

A A are the legs or bars of the dividers, pointed at both ends, and having each a slot for substantially half their length, for the reception of the clamping devices and the passage of the pivot. The usual mode of construction heretofore used is to make the slot beveled or flaring outward and clamp the legs against one another by means of pieces which are reversely beveled to fit the slots and are drawn forcibly toward one another and against the slotted bars. The legs are thus tightly pressed against one another, and when the clamp is tight enough to prevent slipping along the slot a great deal of friction is encountered in opening or closing the legs, which operation is constantly necessary in their use. When so made the bars are also worn away unevenly on their faces which come in contact. I have obviated these difficulties by placing the bearing-pieces B B' between the pivoted bars and compressing the latter against them. The bearing-pieces being of such thick-

ness as to leave a small space between the side bars, and having a pivotal connection with one another, the friction takes place entirely between them, and there is no friction, contact, or wear between the pivoted bars. The bars are made parallel with one another for such part of their length as the slot extends, and from that point approach one another until the points of the divider-bars at each end coincide with one another, (see Fig. 2,) this being necessary to their operating with the greatest accuracy. By beveling the slots A' A' so that they flare inwardly, (see Fig. 3,) and beveling the bearing-pieces B B' to fit the slot, the bars A A may be held more firmly in position and a longitudinal slipping prevented. The bearing-pieces B B' are of sufficient length to obtain a firm engagement with the bars A A. The clamping is effected by means of engaging pieces or washers C C' on the outside of bars A A, connected by a bolt, E, and thumb-nut F. The bolt E may be relied upon to keep the pieces B B' in axial line with one another, the inner surfaces of said pieces being perfectly plain, (see Fig. 3,) or preferably, as shown, a circular boss, *b*, may be raised upon the surface of one and a corresponding rabbet or depression made in the surface of the other, into which the part *b* fits closely, thus forming a bearing of greater circumference and trueness of center. (See Figs. 4 and 5.) The washers C C' may be made with slight inward rectangular projections, which fit the slots A' and prevent rotation of the washers, thus adding to the firmness with which the legs are clamped, (see Figs. 2 and 3;) or a construction like Fig. 4 may be used, in which the slots A' A' of the legs A A have a bevel flaring outwardly, which the washers C C' are made to fit, and by means of which the washers are prevented from turning and enabled to more securely clamp the legs to the pivot. The usual method of preventing the nut F from being turned and loosened by the movement of the legs is adopted, the bolt being squared in the washer against which the nut bears and turning in the clamping-pieces of the opposite leg.

What I claim is—

1. The herein-described adjustable pivot-joint, consisting of the combination, with the slotted pivoted bars, of bearing-pieces pivot-



ally connected with one another and arranged between said bars to prevent their contact, and devices engaging with the bars, whereby they may be compressed against the bearing-pieces, substantially as set forth.

2. The herein-described adjustable pivot-joint, consisting of the combination, with the slotted pivoted bars, of bearing-pieces arranged between said bars to prevent their contact, a portion of one bearing-piece being let into the other to form a pivotal bearing, and devices engaging with the bars, whereby they may be compressed against the bearing-pieces, substantially as set forth.

3. The herein-described adjustable pivot-joint, consisting of the combination, with the pivoted bars having beveled slots flaring toward the opposing surfaces of the bars, of correspondingly-beveled bearing-pieces pivotally connected with one another and arranged between said bars to prevent their contact, and devices engaging with the bars, whereby they may be compressed against the bearing-pieces, substantially as set forth.

4. The herein-described adjustable pivot-joint, consisting of the combination, with the pivoted bars having beveled slots flaring toward the opposing surfaces of the bars, of correspondingly-beveled bearing-pieces arranged between said bars to prevent their contact, a portion of one bearing-piece being let into the other to form a pivotal bearing, and devices engaging with the bars, whereby they may be compressed against the bearing-pieces, substantially as set forth.

5. The herein-described adjustable pivot-joint, consisting of the combination, with the slotted pivoted bars, of bearing-pieces pivotally connected with one another and arranged between said bars to prevent their contact, and pieces wider than the narrowest part of the slots engaging with the outer portion of the bars and connected by a bolt and nut, whereby the bars may be compressed against the bearing-pieces, substantially as set forth.

6. The herein-described adjustable pivot-joint, consisting of the combination, with the slotted pivoted bars, of bearing-pieces interposed between said bars to prevent their contact, a portion of one bearing-piece being let into the other to form a pivotal bearing, and pieces wider than the narrowest part of the slots engaging with the outer portion of the bars, and connected by a bolt and nut, whereby the bars may be compressed against the bearing-pieces, substantially as set forth.

7. The herein-described adjustable pivot-joint, consisting of the combination, with the pivoted bars having beveled slots flaring toward the opposing surfaces of the bars, of correspondingly-beveled bearing-pieces having a pivotal connection with one another, and arranged between said bars to prevent their contact, and pieces wider than the narrowest part of the slots engaging with the outer portion of the bars, and connected by a bolt and nut, whereby the bars may be compressed against

the bearing-pieces, substantially as set forth.

8. The herein-described adjustable pivot-joint, consisting of the combination, with the pivoted bars having beveled slots flaring toward the opposing surfaces of the bars, of correspondingly-beveled bearing-pieces interposed between said bars to prevent their contact, a portion of one bearing-piece being let into the other to form a pivotal bearing, and pieces wider than the narrowest part of the slots engaging with the outer portion of the bars, and connected by a bolt and nut, whereby the bars may be compressed against the bearing-pieces, substantially as set forth.

9. The herein-described adjustable pivot-joint, consisting of the combination, with the slotted pivoted bars, of bearing-pieces pivotally connected with one another and arranged between said bars to prevent their contact, and pieces beveled and seated in an outwardly-flaring portion of the slot, and connected by a bolt and nut, whereby the bars may be compressed against the bearing-pieces, substantially as set forth.

10. The herein-described adjustable pivot-joint, consisting of the combination of the slotted pivoted bars, of bearing-pieces interposed between said bars to prevent their contact, a portion of one bearing-piece being let into the other to form a pivotal bearing, and pieces beveled and seated in an outwardly-flaring portion of the slot, and connected by a bolt and nut, whereby the bars may be compressed against the bearing-pieces, substantially as set forth.

11. The herein-described adjustable pivot-joint, consisting of the combination, with the pivoted bars having beveled slots flaring toward the opposing surfaces of the bars, of correspondingly-beveled bearing-pieces having a pivotal connection with one another, and arranged between said bars to prevent their contact, and pieces beveled and seated in an outwardly-flaring portion of the slot, and connected by a bolt and nut, whereby the bars may be compressed against the bearing-pieces, substantially as set forth.

12. The herein-described adjustable pivot-joint, consisting of the combination, with the pivoted bars having beveled slots flaring toward the opposing surfaces of the bars, of correspondingly-beveled bearing-pieces arranged between said bars to prevent their contact, a portion of one bearing-piece being let into the other to form a pivotal bearing, and pieces beveled and seated in an outwardly-flaring portion of the slot, and connected by a bolt and nut, whereby the bars may be compressed against the bearing-pieces, substantially as set forth.

13. The herein-described adjustable pivot-joint, consisting of the combination of the slotted pivoted bars, arranged parallel to and at a slight distance from one another for that portion of their length which is occupied by the slots, and coinciding with one another at their points, of bearing-pieces pivotally con-



5 nected with one another, and arranged between said bars to prevent their contact, and devices engaging with the bars, whereby they may be compressed against the bearing-pieces, substantially as set forth.

10 14. The combination, with the pivoted bars, of clamps whereby the bars may be secured to the pivot at various points of their length, the clamp of one bar having a circular raised portion concentric with the pivot, and the clamp of the other bar having a corresponding recess,

also circular, and concentric with the pivot, within which recess the said raised portion fits closely to form a pivotal bearing, substantially as set forth.

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

HARRY N. LOW.

Witnesses:

J. S. BARKER,

L. H. MARSHALL.