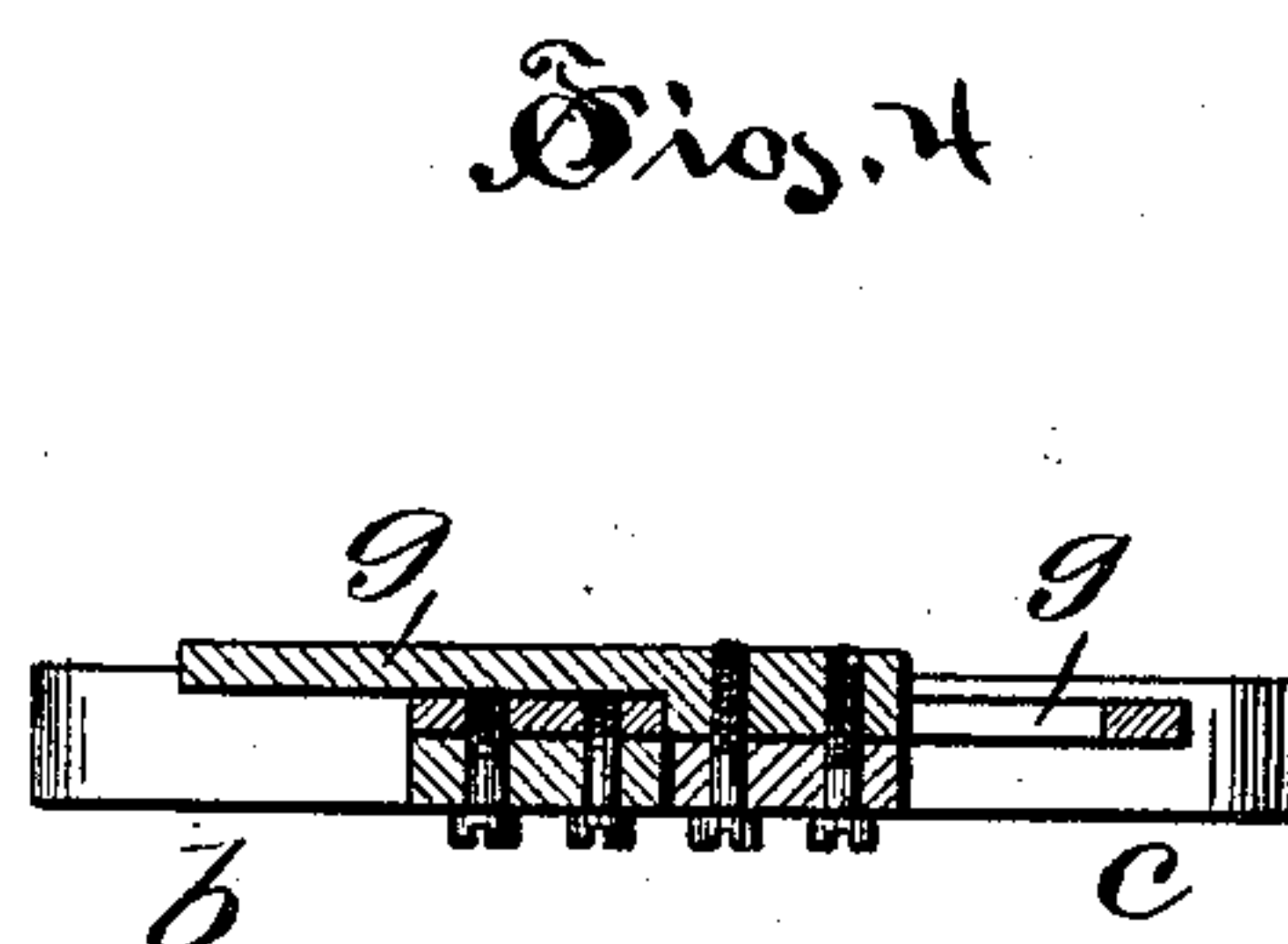
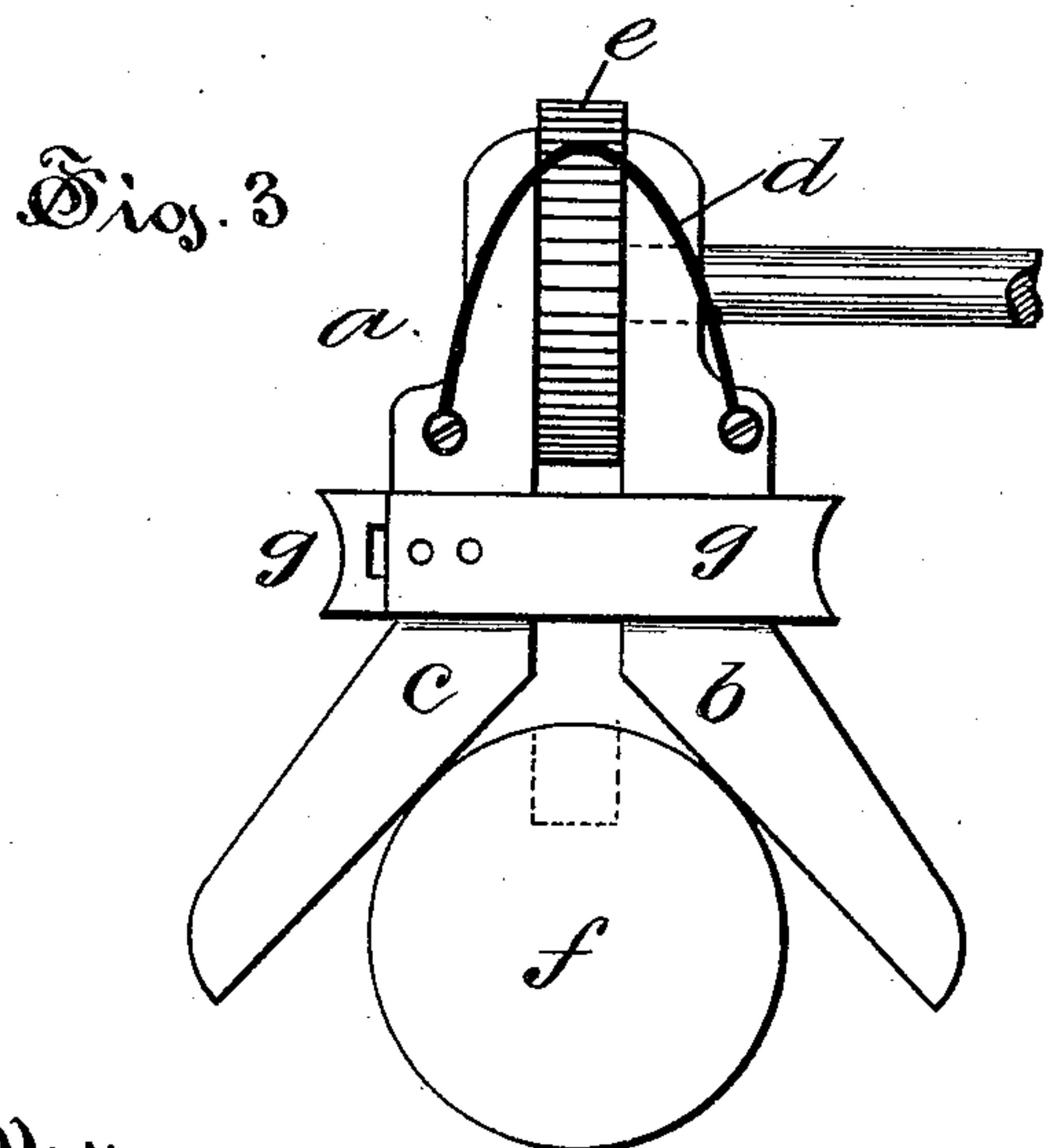
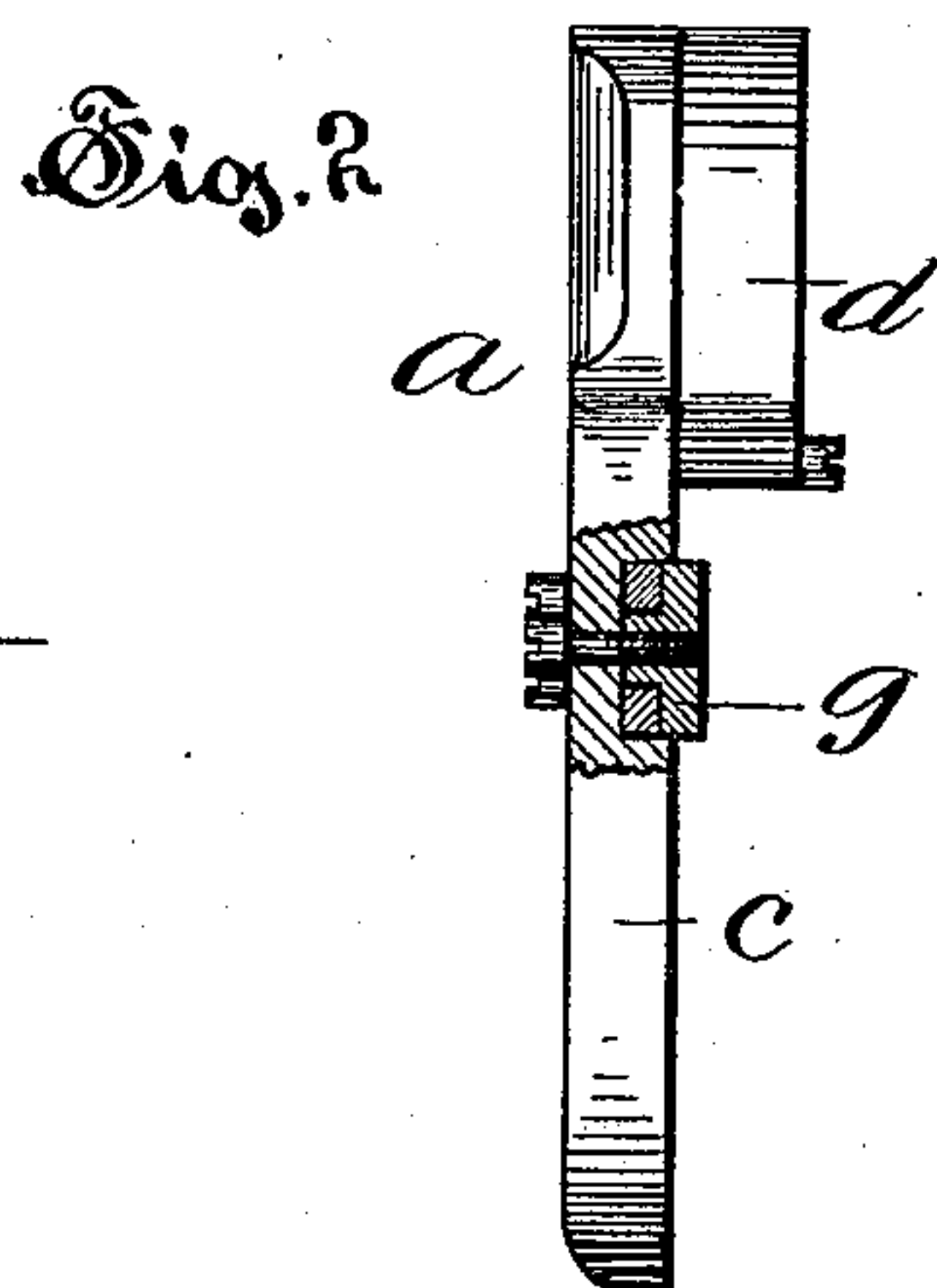
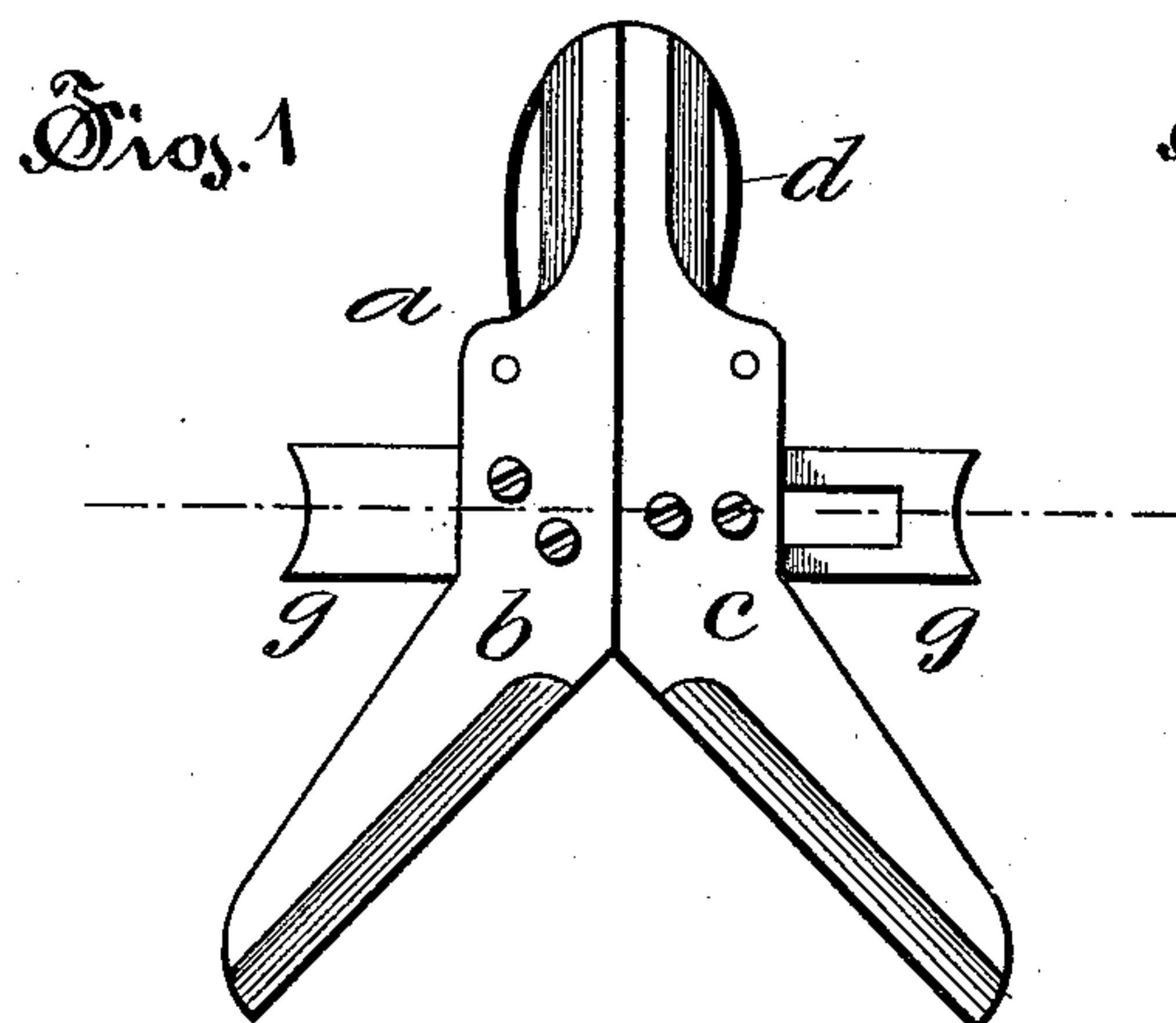


(No Model.)

F. A. SEAVER.
CENTERING DEVICE.

No. 407,617.

Patented July 23, 1889.



Witnesses:
Harry R. Williams
A. B. Jenkins

Inventor,
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UNITED STATES PATENT OFFICE.

FREDERIC A. SEAVER, OF HARTFORD, CONNECTICUT.

CENTERING DEVICE.

SPECIFICATION forming part of Letters Patent No. 407,617, dated July 23, 1889.

Application filed April 9, 1889. Serial No. 306,613. (No model.)

To all whom it may concern:

Be it known that I, FREDERIC A. SEAVER, of Hartford, in the county of Hartford and State of Connecticut, have invented certain
5 new and useful Improvements in Tools for Centering Key-Slot Cutters, of which the following is a full, clear, and exact description, whereby any one skilled in the art can make and use the same.

10 The object of my invention is to provide a simple and convenient tool by means of which a shaft may be centrally placed with reference to the cutter of the key-seating or milling tool that is used in connection with what
15 is known as the "Woodruff system" of key-seating; and to this end my invention consists in the combination of the spring-retained angular jaws, and in details of the parts of the device and in their combination, as more
20 particularly hereinafter described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a front view of my improved instrument. Fig. 2 is a side view of the same. Fig. 3 is a detail view illustrating the manner of using the
25 tool for the purpose of centering the shaft in which the key-slot is to be cut. Fig. 4 is a detail front view of the cutter and view in central section of the shaft.

30 In the accompanying drawings, the letter *a* denotes the device as a whole that is composed of the two angular-shaped arms *b c*, each arm being provided above the angle with a projecting bar *g*, that extends through
35 a mortise or socket in the opposite bar in such manner that the two arms by pressure upon the other end of these bars may be given a sliding movement toward and from each other. A bow-shaped spring *d* is preferably
40 used to connect the arms, the inner ends being provided with sockets, through which pins or screws are passed to serve as means for attachment of the spring to the two arms, and the normal operation of this spring
45 tends to hold the arms with their upper portion and adjacent edges in contact, as shown in Fig. 1 of the drawings. When the arms are thus closed, their lower portions turn or flare outward and make with each other a

convenient angle of about ninety degrees, 50 and the inner faces of these flaring portions of the arms are formed flat, or of other convenient outline, to enable them to be applied to the circumference of a cylindrical shaft, and when applied in this manner a
55 plane passing between the upper part of the arms will also be in line with the axis of the shaft.

In using my improved device it is grasped in such manner that pressure may be applied 60 on the outer ends of the projecting arms *b c*, so as to push them slightly apart a distance sufficient to attach the tool to the side parts of the cutter *e*, the resiliency of the spring serving, as soon as the pressure 65 is removed, to clamp the tool upon the cutter in the position indicated in Fig. 3 of the drawings. While the tool is thus held on the cutter, the shaft *f* may be adjusted in a clamp adapted to hold the work so that its surface 70 makes contact with both arms of the tool, and when the latter arms are tangential to the surface of the shaft the latter is finally clamped, the tool removed, and the cutter can then be started up, and if moved directly 75 toward the shaft will operate to cut the slot radially, so that the key will be exactly central of the shaft.

Each of the angular arms *b c* has what may be called a "clamping-face" and a "working- 80 face," the clamping-faces being those that are held normally in contact with each other by the spring, and between which the cutter is temporarily grasped while the tool is in use, and the latter being the angularly-dis- 85 posed flaring parts that are adapted to be applied to the surface of a shaft or like piece of work that is to be centrally placed with reference to the plane of movement of the cutter. 90

I claim as my invention—

1. In combination with a retaining-spring, the angular arms having the adjacent clamping-jaws with the flaring working-faces, all substantially as described. 95

2. In combination with angular arms having clamping-faces and the angularly-disposed working-faces, the cross-bar uniting

the two arms, and the spring operating to normally hold the clamping-faces of the arms in contact, all substantially as described.

3. In combination, the angular arms having the clamping-faces and the angularly-disposed working-faces, the cross-bars fast to one of the arms and projecting beyond the

opposite arm, and the retaining-spring, all substantially as described.

FREDERIC A. SEAVER.

Witnesses:

A. B. JENKINS,

C. L. BURDETT.