

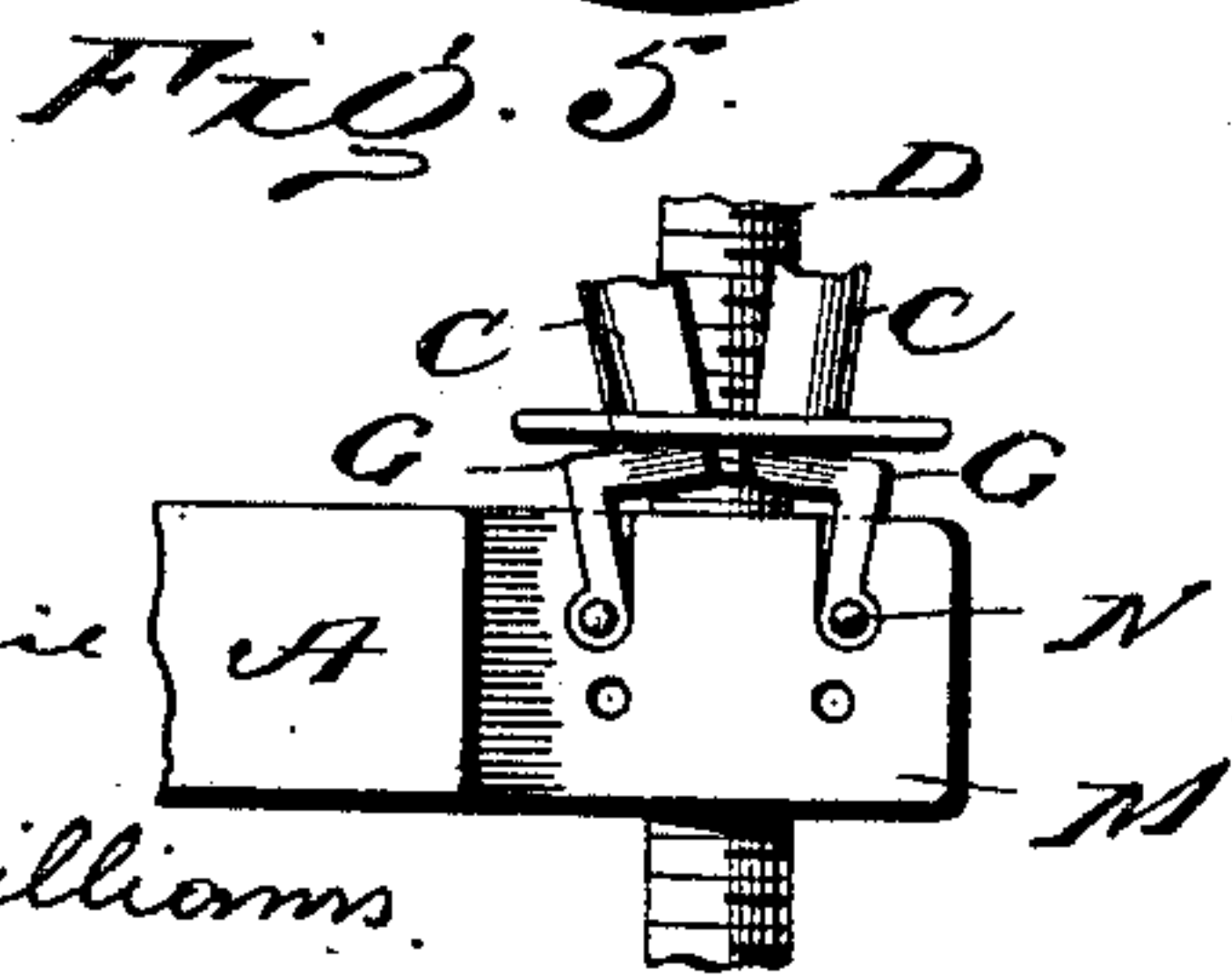
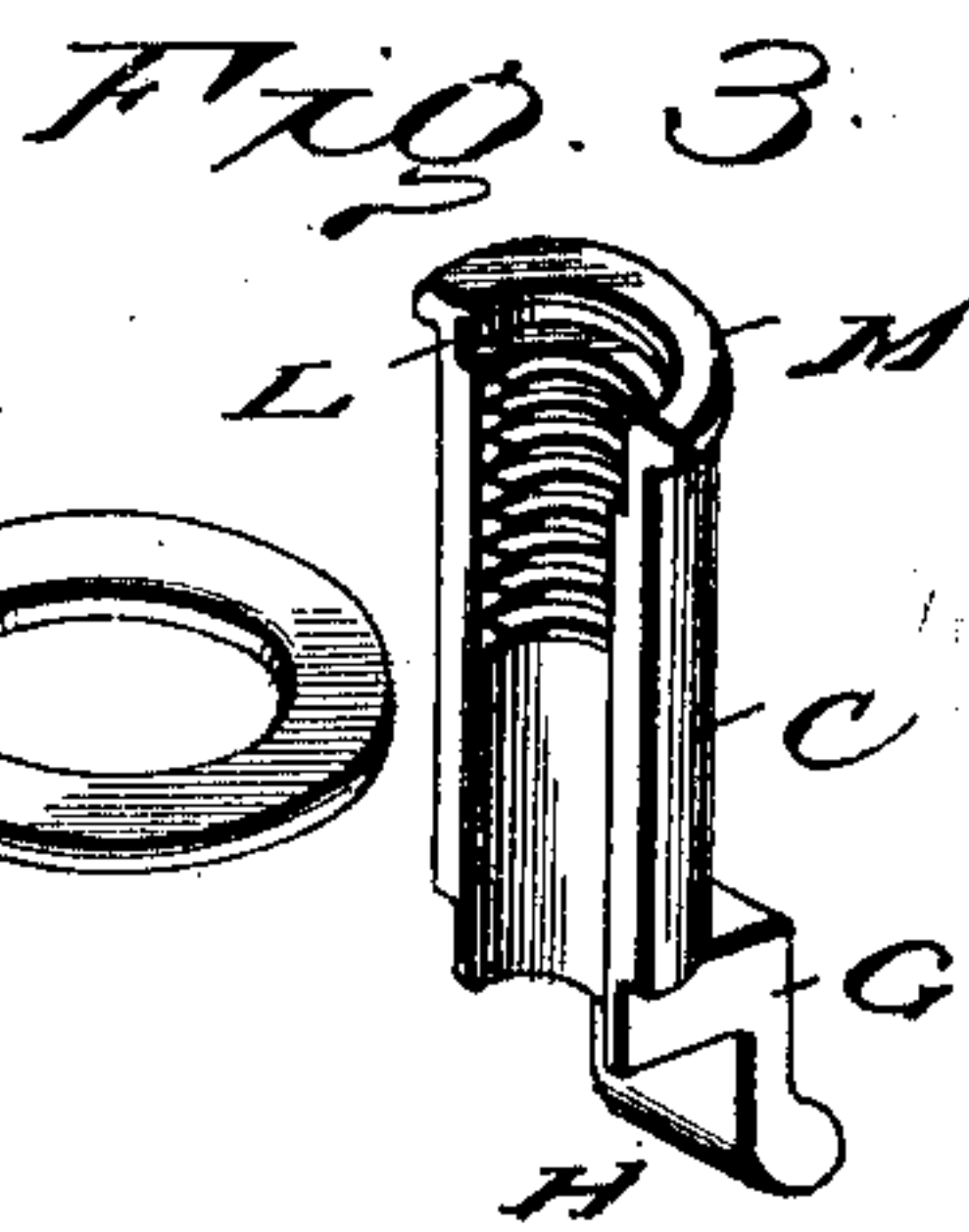
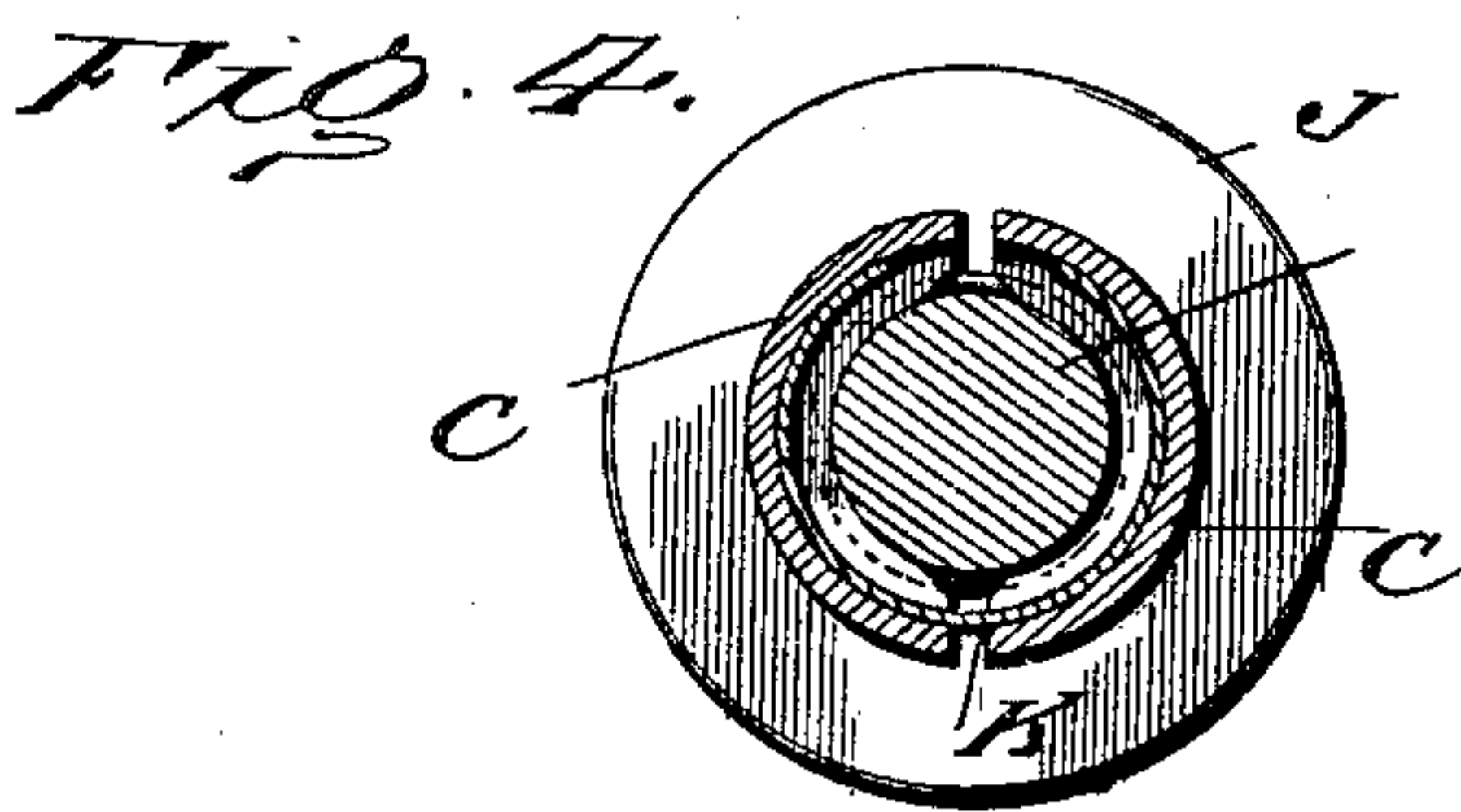
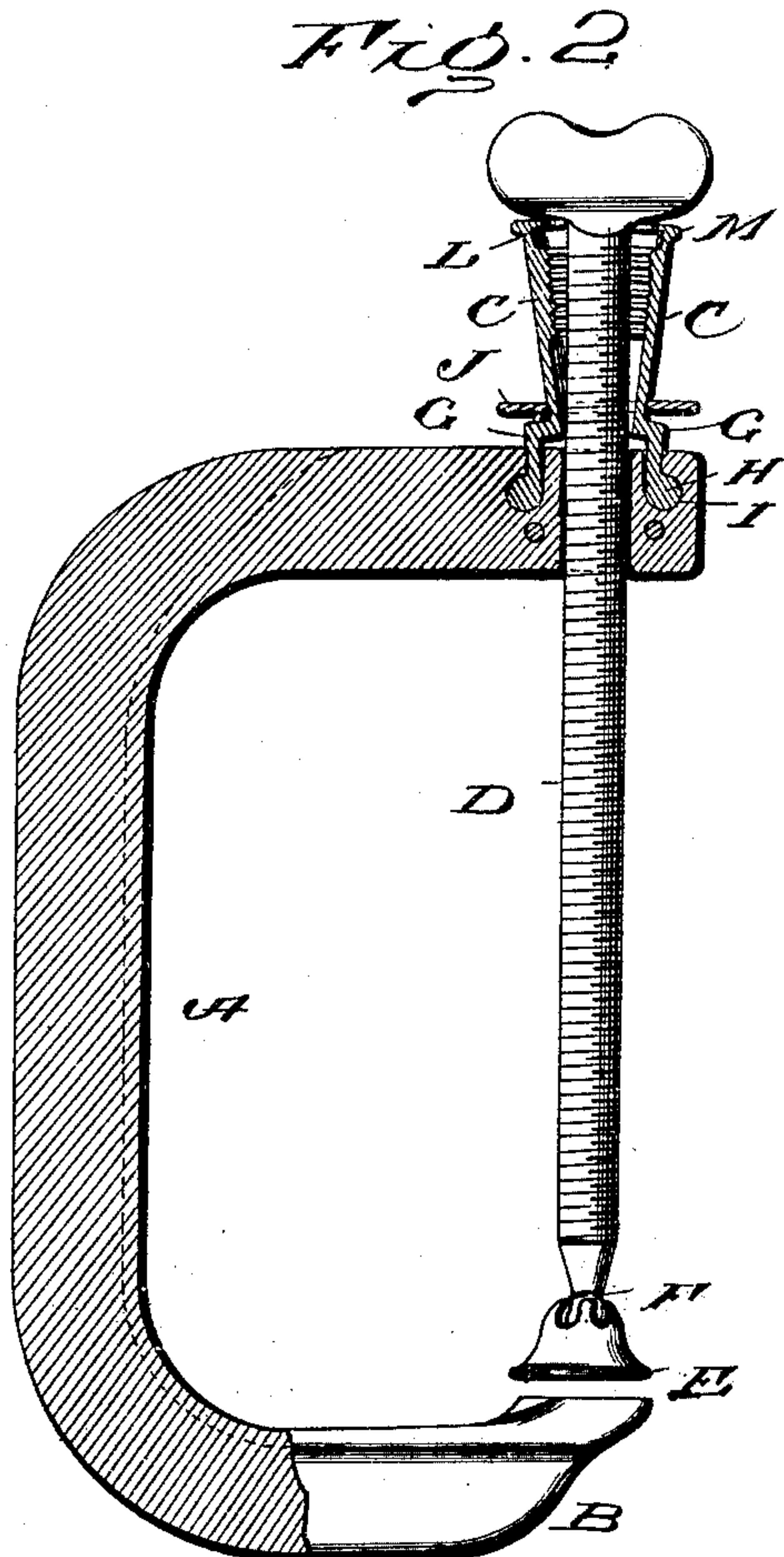
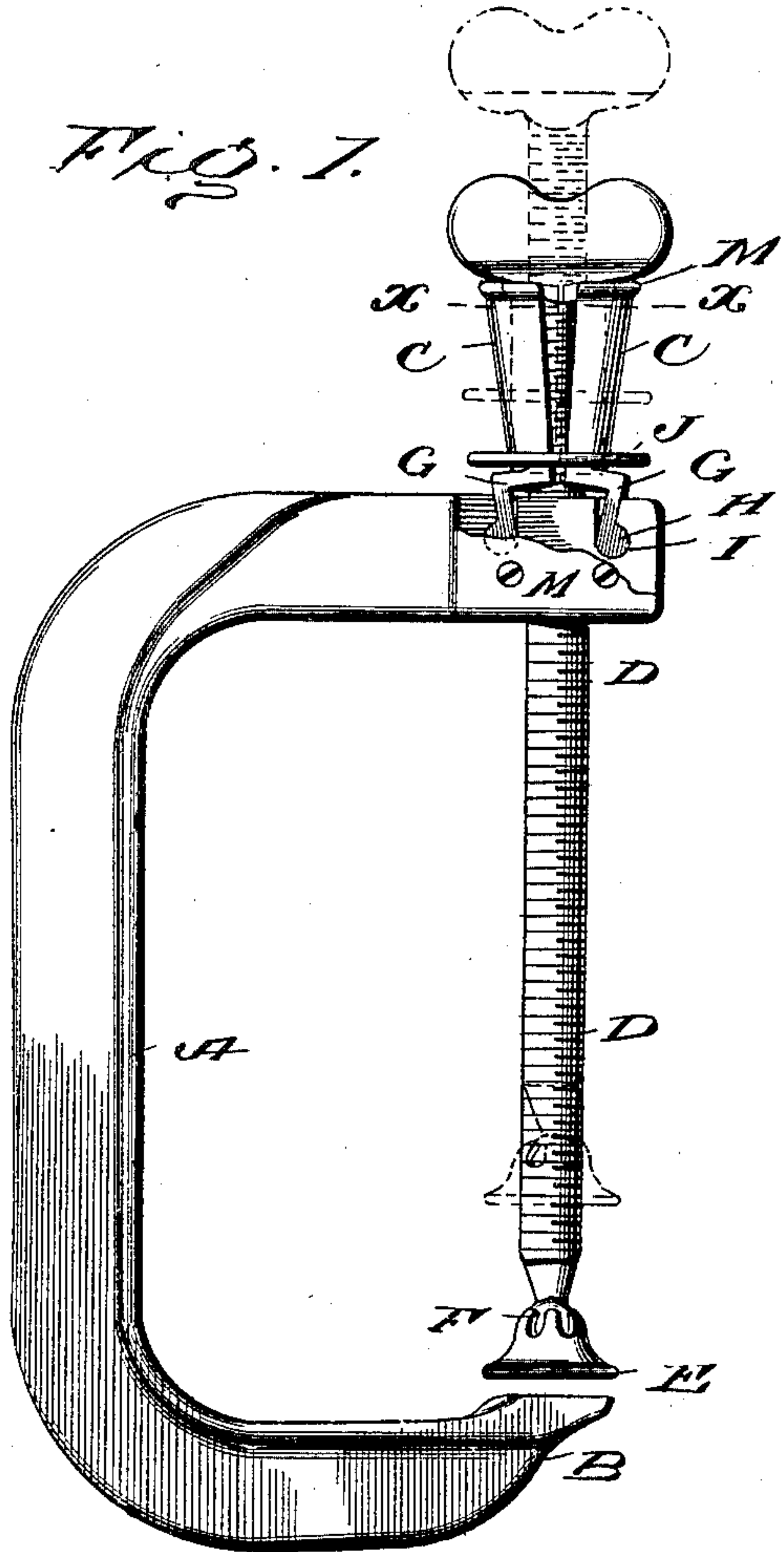
No. 686,924.

Patented Nov. 19, 1901.

E. CRAMER.
JOINER'S CLAMP.

(Application filed Aug. 10, 1901.)

(No Model.)



Witnesses

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JOINER'S CLAMP.

SPECIFICATION forming part of Letters Patent No. 686,924, dated November 19, 1901.

Application filed August 10, 1901. Serial No. 71,666. (No model.)

To all whom it may concern:

Be it known that I, ENOCH CRAMER, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Joiners' Clamps; 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.

My invention relates to certain new and useful improvements in joiners' clamps and similar devices.

As is well known to those having to use joiners' clamps, considerable difficulty and the expenditure of a great deal of time are experienced in the adjustment of the clamp in position to be operative and in the removal of the same when necessary, because the clamp to be effective for the purposes for which it is designed should have the threads of the screws which engage with the jaws of slow pitch, and this condition makes the operation of the adjustment and release of the clamp slow and tedious, and the frequent and continuous movement of the screw within the female threads of the jaw or jaws, as the case may be, in bringing the parts into adjustment to clamp or in releasing the same tends to an unnecessary and rapid wear and destruction of the threads.

My invention has for its objects to provide a clamp which may be readily adjusted to the position necessary to begin the clamping effect and to release the same when desired without involving the slow and tedious process of turning the screw and avoiding the unnecessary wear of the threads.

My invention is designed more particularly for clamps in which one jaw is stationary and the other movable toward and from the stationary jaw, but may be advantageously used in other constructions of clamps, as well as in ratchets, vises, screw-jacks, screw-presses, lathes, and other devices in which the adjustment of parts relatively to each other is accomplished by the movement of an operating-screw.

My invention consists, generically, of an operating-screw passing freely through one jaw of the frame and through a divided nut hinged or pivoted to said jaw and provided

with means for holding the nut in contact with the threads of the screw or releasing the same when desired, as will be hereinafter more fully described.

In order that those skilled in the art to which my invention appertains may know how to make and use my improved clamp, I will proceed to describe the construction and operation of the same, referring by letters to the accompanying drawings, in which—

Figure 1 is a side elevation, partly broken away, with the nut closed in dotted lines and open in full lines, the clamping-screw being shown by dotted lines in elevated position. Fig. 2 is a central section showing the nut closed. Fig. 3 is a detail perspective view showing nut separated. Fig. 4 is a cross-section on line xx of Fig. 1, and Fig. 5 is a side elevation showing modification.

Similar letters of reference indicate like parts in the several figures of the drawings.

A is a U-shaped frame one end B of which constitutes the fixed jaw and within the opposite end of which are pivoted the two halves C of a divided nut, and D is the screw which travels through the nut C C and is provided at its lower end with any suitably shaped and proportioned jaw E, which is connected with the screw by the ordinary and well-known ball-and-socket construction. (Shown at F.) The frame and other parts of the device are preferably made of metal. Each part C of the nut is extended vertically to constitute an arm G, the end H of which is circular, as shown, and adapted to be located by lateral movement in a correspondingly-shaped bearing or box I, formed in the upper end of the frame A, as clearly shown at Fig. 2, so that the connections between the frame and the two parts of the nut constitute knuckle-joints, the axes of which are at right angles to the axis of the clamping-screw D and the distance between which is greater than the diameter of the screw, so that when the two parts of the nut move away from each other upon their respective axes the thread of the screw will be quickly and certainly released from contact with the threads in the nut. The bodies of the two halves of the nut extend at right angles from the arms to constitute a base parallel with and resting upon the upper surface of the end of the

frame, and hence when the two halves are brought into the position shown in dotted lines at Fig. 1 the contact between the base of the nut and the top surface of the frame prevents the nut from gripping the thread of the screw too tightly. The end of the frame is bored vertically, as shown, to receive the screw and to permit it to reciprocate freely therethrough, and the outer wall of the two-part nut is slightly tapered from the top toward the bottom thereof, so that when the two parts are separated, as shown in full lines at Fig. 1, the upward movement of a ring washer J will cause the two parts of the nut to close upon the screw D, as shown in dotted lines, and the vertical movement of the washer, obviously releasing the parts of the nut, permits them to be separated by the action of circular spring K, located within circular grooves L in the interior of the flange-head M of the nut, which head constitutes a stop to limit the upward movement of the ring washer J. The spring K not only serves to separate the two parts of the nut when the washer is forced downwardly, but when in its elevated position forces the parts of the nut into such frictional contact with the washer as to prevent the accidental movement of the same. The threads of the two parts of the nut are preferably slightly beveled at their extremities to avoid the possibility of binding irregularly upon the thread of the operating-screw. This, however, is not essentially necessary when the several parts are all accurately made and assembled. In order to prevent any lateral movement in the knuckle-joints between the parts of the nut and the end of the frame, a face-plate N is secured by screws within a suitable recess in the side of the frame, as clearly shown, and the vertical passages within which the arms G of the nut vibrate are beveled or inclined, as clearly shown at Figs. 1, 2, and 5.

While I prefer the construction described, I may for economy's sake make the arms G of the nuts as shown at Fig. 5 and secure them in position within a straight channel in the end of the frame by an ordinary pin N, which constitutes the axis of motion of the two parts of the nut.

From the construction shown and described it will be readily understood that in moving the screw vertically to adjust the jaws preparatory to clamping a body between them

and in lifting the screw to release the clamped body the washer is forced downwardly, whereupon the two parts of the nut are vibrated upon their axes into the position shown in dotted lines at Fig. 1, thus releasing the contact between the nut and screw and rendering the latter free to be quickly moved in either direction, and that the nut and screw may be promptly restored to operative relation by the upward movement of the ring washer.

Having described the construction and operation of my improved clamp, what I claim as new, and desire to secure by Letters Patent, is—

1. In a clamp such as described, a frame carrying a fixed jaw at one end and a two-part nut having the lower extremities hinged or vibratively connected to the other jaw and having its outer walls tapering, a screw located within the jaw and the two-part nut, and carrying a clamping-jaw at its inner end, and means for holding the two parts of the nut in operative relation with the screw, and releasing the same when desired substantially as hereinbefore set forth.

2. In a clamp such as described, the two-part nut pivoted below the base of the nut, the outer walls of the parts of the nut tapering downwardly and toward the center, a ring washer surrounding the nut, and means for automatically vibrating the parts of the nut when the ring washer is forced downwardly, substantially as and for the purpose set forth.

3. In combination with the frame, provided with circular seats or boxes, the two-part nut formed with vertical arms, extending below the base and forward at their extremities to fit within the seats in the frame, substantially as and for the purpose set forth.

4. The two-part nut formed with a flanged top to constitute a stop to limit the upward movement of the ring washer, and with an interior groove or seat adapted to receive curved spring, substantially as and for the purpose set forth.

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

ENOCH CRAMER.

Witnesses:

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VAN S. ANDERSON.