

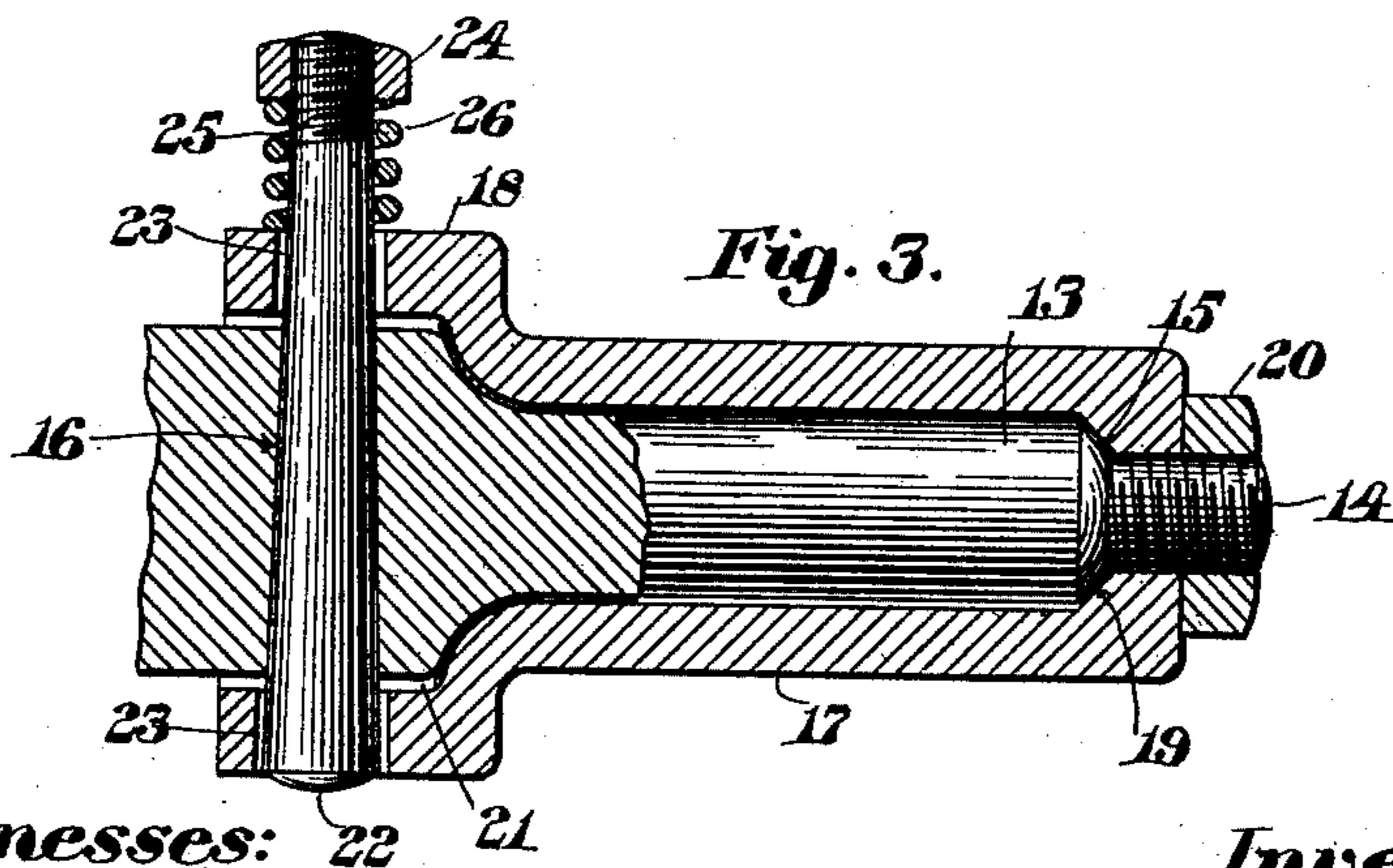
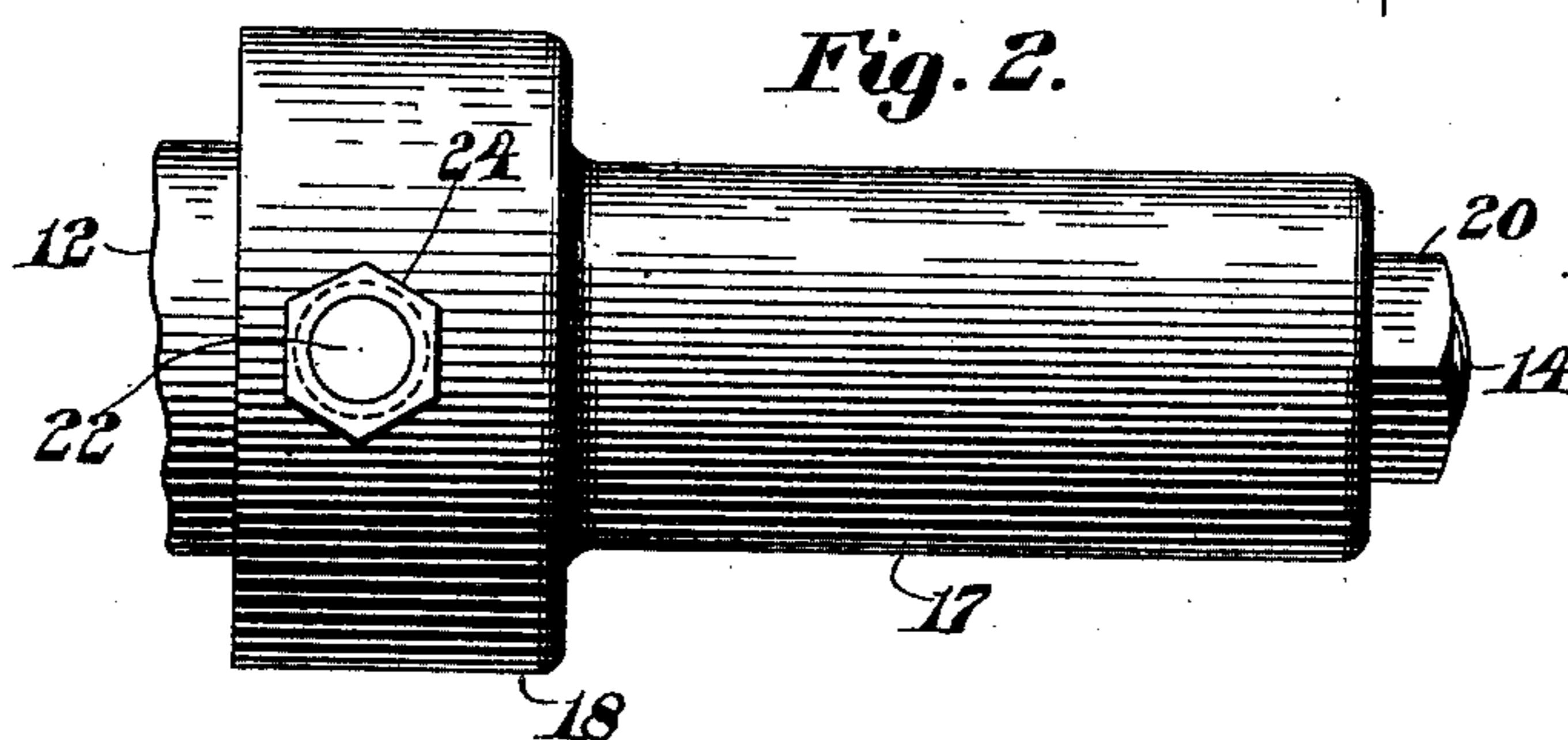
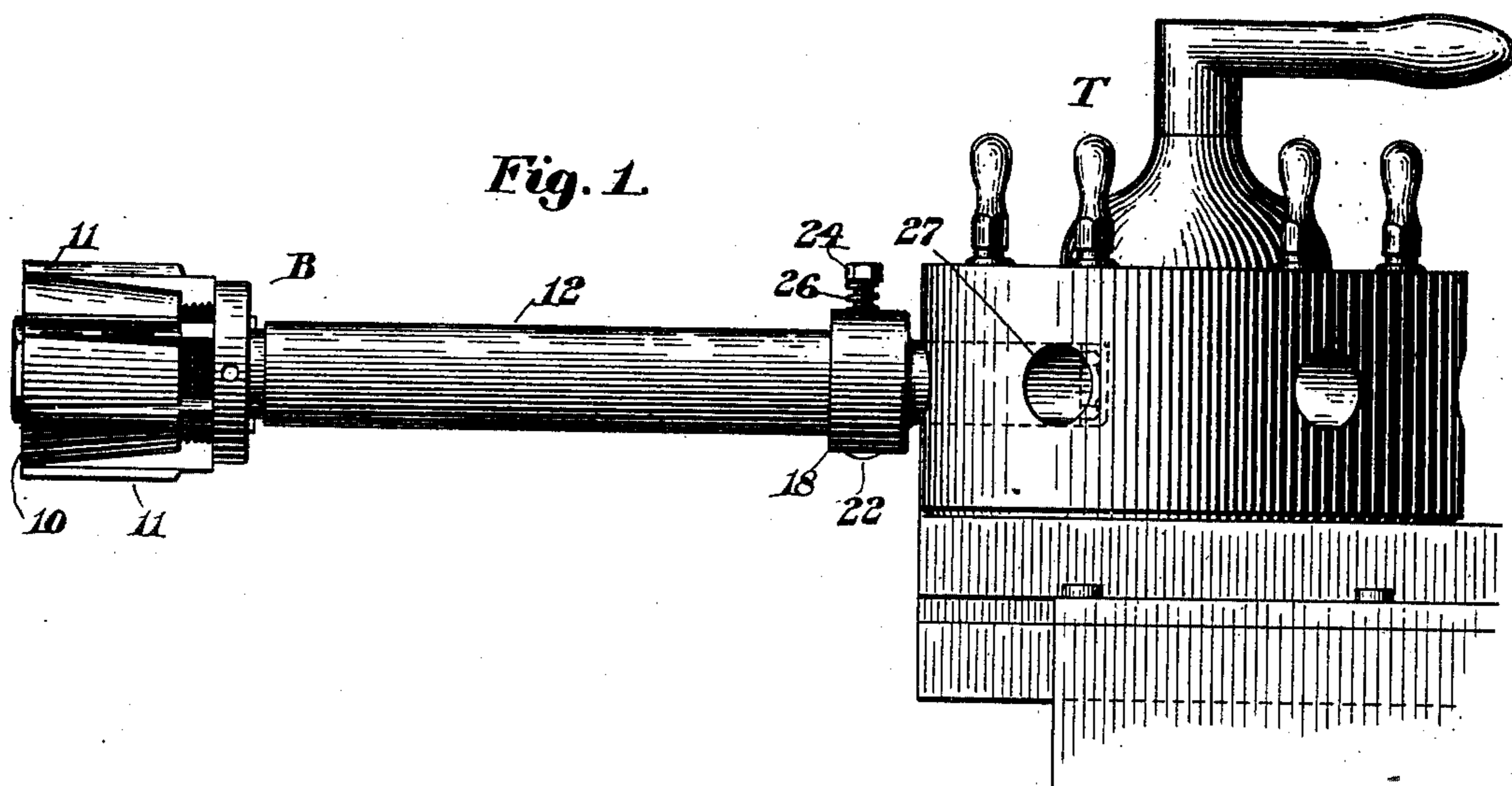
No. 716,438.

Patented Dec. 23, 1902.

J. N. LAPOINTE.  
REAMER.

(Application filed Feb. 15, 1902.)

(No Model.)



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# UNITED STATES PATENT OFFICE.

JOSEPH N. LAPOINTE, OF HYDEPARK, MASSACHUSETTS.

## REAMER.

SPECIFICATION forming part of Letters Patent No. 716,438, dated December 23, 1902.

Application filed February 15, 1902. Serial No. 94,216. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH N. LAPOINTE, a citizen of the United States of America, and a resident of Hydepark, in the county of Norfolk and State of Massachusetts, have invented certain new and useful Improvements in Tool-Supports, of which the following is a specification.

My invention relates to metal-working tools, and more particularly to supports therefor.

With such tools as finishing-reamers when used in a turret-machine it is necessary to allow some lateral play in the support to provide for correct centering in the work, and when they are of large diameter and therefore heavy the natural tendency is for them to sag downward, so that upon entering the work their weight causes them to cut most deeply at the lower side. This distortion gradually decreases as more of the body of the reamer comes into bearing upon the work, being a minimum when the entire length of the blade is in contact. Then as the reamer emerges from the hole this vertical elongation increases until the work is cleared. To obviate such defects are the principal objects of my invention.

In the accompanying drawings, Figure 1 shows one form of my improved support in place in the turret of a lathe. Fig. 2 is a top plan view of the rear portion of the tool and the bushing removed from the turret, and Fig. 3 is a central vertical longitudinal section thereof.

Similar characters indicate like parts throughout the several figures of the drawings.

The letter B designates a tool, in the present instance a reamer, comprising a head 10, having cutting-blades 11 and a shank 12. The end of the shank opposite the head preferably has a reduced portion 13 and terminates in a still further reduced and threaded portion 14, the shoulder 15 between these portions 13 and 14 being shown as curved. In the shank, preferably at the rear of the main portion 12, is an opening 16, shown as tapered. Surrounding this rearward end of the shank is a bushing or member 17, having an enlargement at 18 about the opening 16, and an inclined rear wall 19 to contact with the shoulder 15, in which wall there is an open-

ing through which the portion 14 of the shank extends and is secured against longitudinal movement by a nut 20. The bushing is of such internal diameter that a space is left at 21 between it and the shank to permit a lateral movement in any direction, giving the tool a certain freedom of movement to center itself. To prevent relative rotation between the tool-shank and its bushing, the former is provided with a projection, here shown as a tapered pin 22, fitting the opening 16 in the shank and projecting on both sides thereof, the taper form providing for the ready removal of the pin to permit the separation of the parts. The shank-opening may register with a pair of opposite openings 23 in the bushing, through which the ends of the pin may project, the diameter of said pin and of the bushing-openings being such that the former will have some lateral as well as longitudinal movement to allow the play of the shank in the bushing in all directions. One end of the pin, preferably the smaller, is provided with a contact member, which may consist of a nut 24, operating upon a threaded portion 25 of the pin. Coacting with the bushing and pin, being situated between the former and the contact member of the latter, is a yieldable member, here illustrated as a spiral spring 26.

In use the shank of the particular tool which it is desired to use is placed in the bushing, with its shoulder 15 in contact with the wall 19, secured in place by applying the nut 20, the pin 22 introduced through the holes 23 and 16, and the spring and contact-nut put in place. The bushing may then be clamped in one of the openings 27 of a turret or stock of a lathe or similar machine, extending for such length therein as to give ample bearing and being located with the pin lying in a substantially vertical direction, with the spring upward. The tension of the spring is then adjusted by turning the nut until the shank is out of contact with the side wall of the bushing, lying substantially in a horizontal plane and centrally of the bushing. The tool may then be fed into the opening to be operated upon by advancing the turret in the ordinary manner, the strong and comparatively massive shoulder 15 and wall 19 taking the thrust of the tool, the rounded surface of

the shoulder rocking upon the wall over a considerable surface as the head centers itself. The pin prevents the rotation of the shank in the bushing, and by securing contact of this pin in the enlarged portion at points considerably removed from the center the "chattering" of the tool is avoided. At all times the weight of the head and shank of any tool in use may be exactly counterpoised by the tension of the spring, so that there will be no tendency to sag and throw the hole out of true.

Having thus described my invention, I claim—

1. A tool-support including a shank or arbor, a member in which the shank is supported for lateral movement, yieldable means for normally maintaining the shank in a substantially horizontal position, and an adjusting device operating upon the shank, whereby it may be counterpoised for tools of different weights.

2. A tool-support including a shank or arbor, a member in which the shank is supported for lateral movement, yieldable means for normally maintaining the shank out of contact with the side wall of the member, and an adjusting device whereby the position of the shank may be varied laterally toward and from the bushing to permit the proper support of different tools.

3. A tool-support including a shank or arbor provided with a shoulder and a threaded portion, a bushing in which the shank is supported for lateral movement having a rear wall with which the shoulder contacts and an opening through which the threaded portion extends, a nut upon said threaded portion outside the rear wall of the bushing, and means for normally maintaining the shank out of contact with the side wall of the bushing.

4. A tool-support including a shank or arbor provided with a curved shoulder and a threaded portion, a bushing in which the shank is supported for lateral movement having an inclined rear wall with which the shoulder contacts and an opening through which the threaded portion extends, a nut upon said threaded portion outside the rear wall of the bushing, and means for normally maintaining the shank out of contact with the side wall of the bushing.

5. A tool-support including a shank or ar-

bor, a bushing in which the shank is supported for lateral movement, a spring coacting with the bushing for normally maintaining the shank out of contact with the side wall of the bushing, and means for adjusting the tension of the spring.

6. A tool-support including a shank or arbor having a projection, a bushing provided with an opening through which the shank projection extends, a contact member carried by the projection, and a spring coacting with the bushing and contact member.

7. A tool-support including a shank or arbor having a threaded projection, a nut operating upon said thread, a bushing provided with an opening through which the shank projection extends, and a spring interposed between the bushing and nut.

8. A tool-support including a shank or arbor having an opening, a bushing provided with opposite openings registering with that of the shank, a pin removably secured in the shank-opening extending through the openings in the bushing, a contact member upon the pin outside the bushing, and a spring interposed between the bushing and the contact member.

9. A tool-support including a shank or arbor having an opening, a bushing provided with opposite openings registering with that of the shank, a pin removably secured in the shank-opening extending through the openings in the bushing, the pin and openings being of such size that a lateral play of the former is permitted, a contact member upon the pin outside the bushing, and a spring interposed between the bushing and the contact member.

10. A tool-support including a shank or arbor having a tapered opening, a bushing provided with openings registering with that of the shank, a tapered pin fitting the shank-opening and extending through the openings in the bushing, a contact member upon the pin outside the bushing, and a spring interposed between the bushing and contact member.

Signed by me at Hydepark, Massachusetts, this 13th day of February, 1902.

JOSEPH N. LAPOINTE.

Witnesses:

FRANK B. RICH,  
FRED A. RICH.