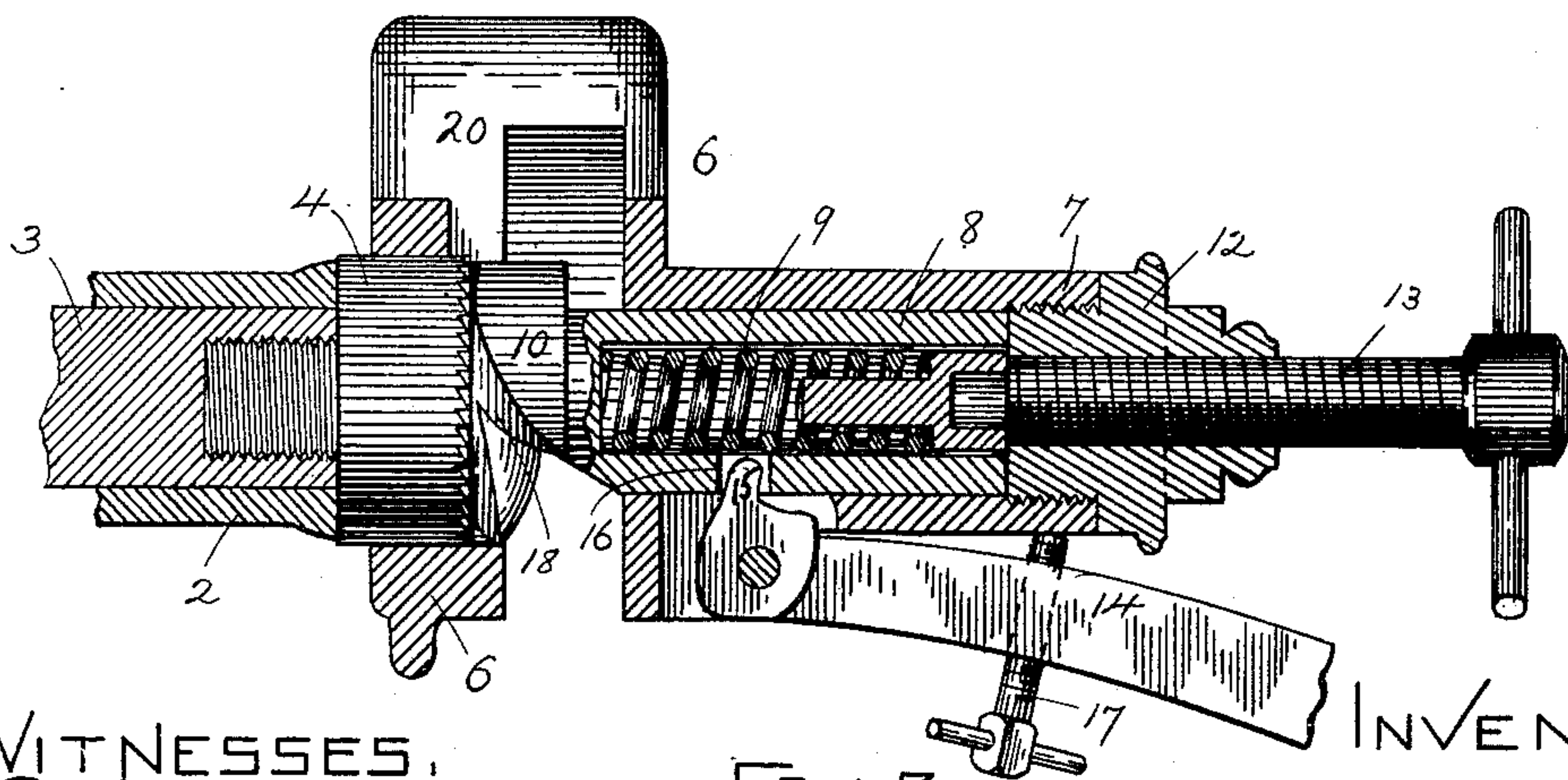
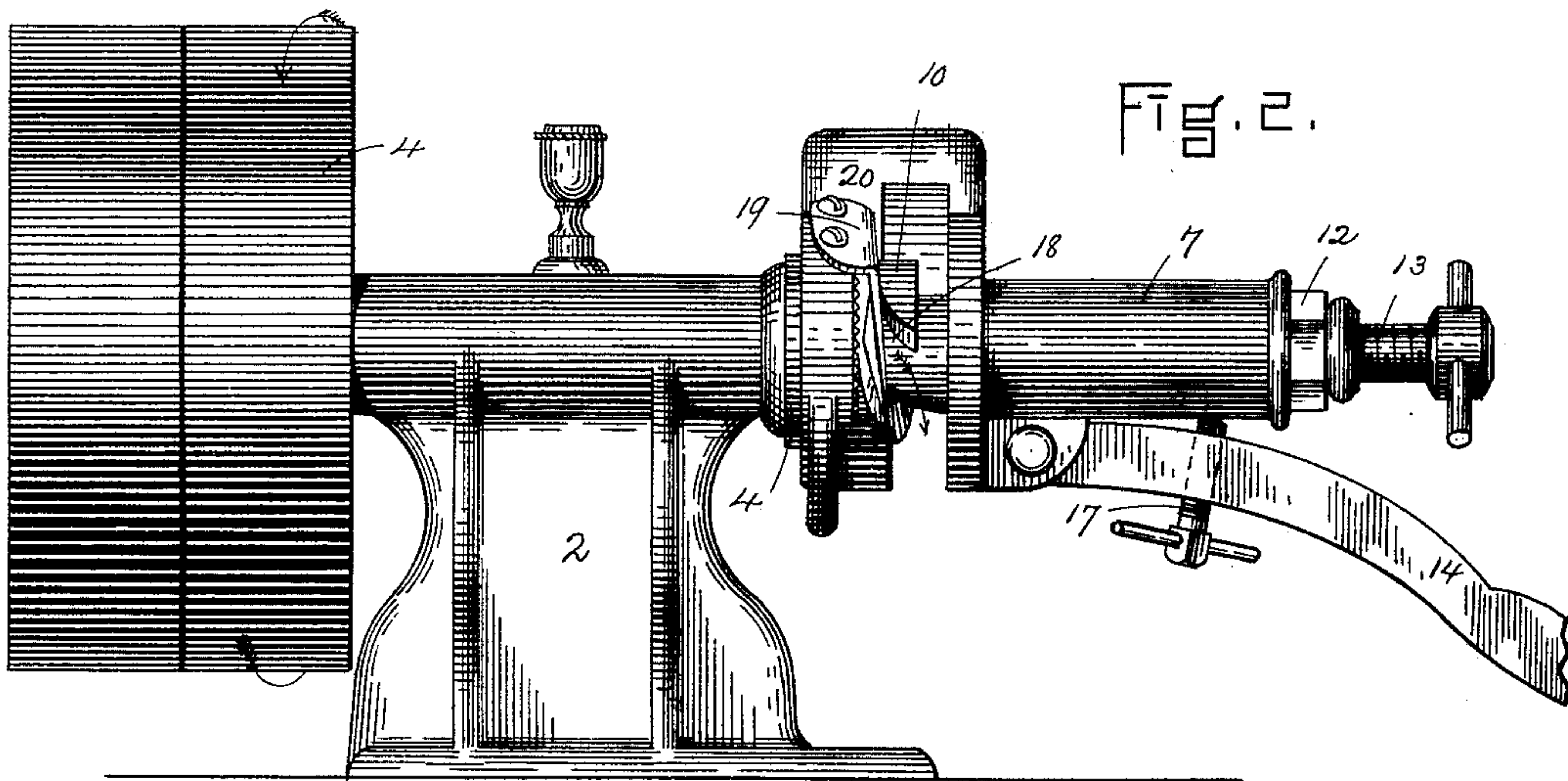
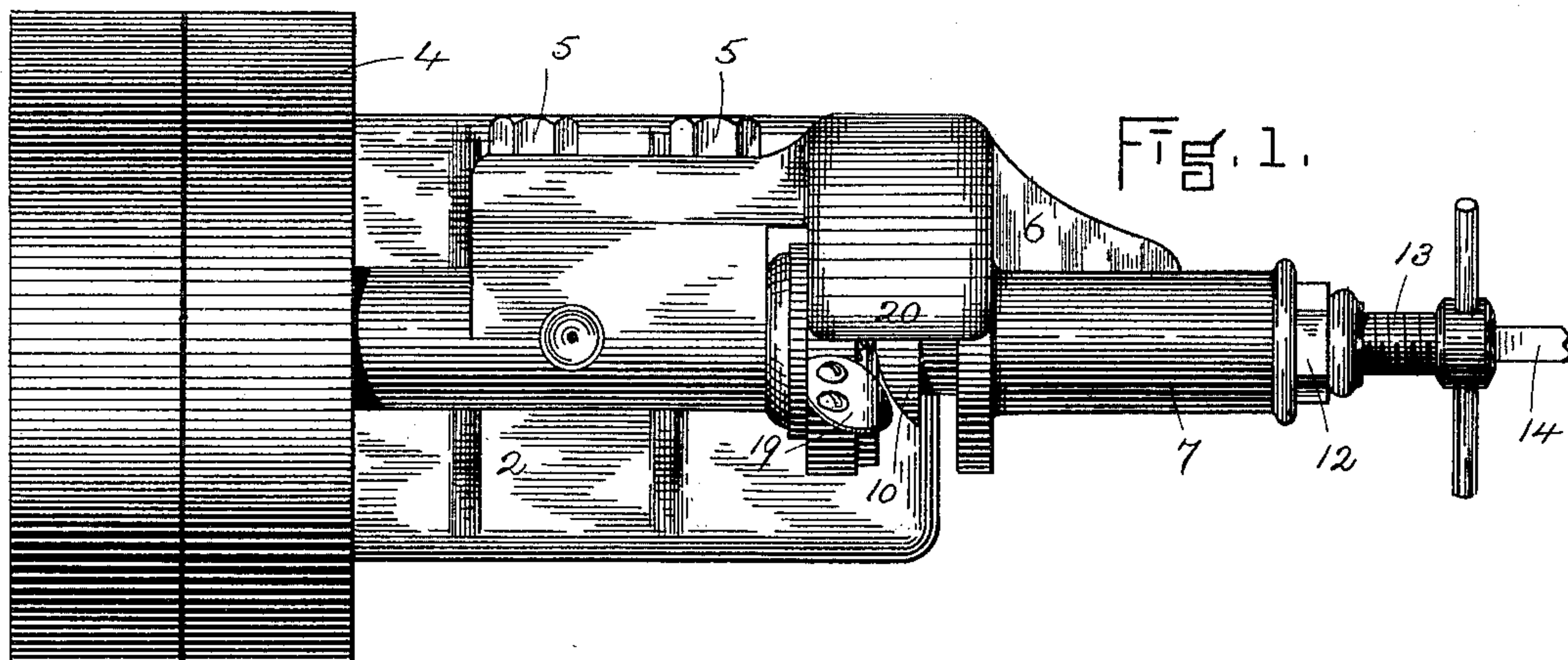


(No Model.)

F. P. ARNOLD.
RAND FORMING MACHINE.

No. 406,865.

Patented July 16, 1889.



WITNESSES.

R. Henry Maish.

Francis C. Starnwood

FIG. 3.

INVENTOR.

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by H. E. Lodge Atty.

UNITED STATES PATENT OFFICE.

FRANCIS P. ARNOLD, OF PEMBROKE, MASSACHUSETTS.

RAND-FORMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 406,865, dated July 16, 1889.

Application filed April 10, 1889. Serial No. 306,675. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS P. ARNOLD, a citizen of the United States, residing at Pembroke, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Rand-Forming Machines; 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 rand-forming machines—that is, mechanism by which a “rand,” so called, is formed from a skived rand-blank, being simultaneously crimped and pressed into circular or horseshoe shape, in readiness to be applied to the boot or shoe in process without further treatment.

In this class of machines the leather blank from which the rand is produced is fed in between a revoluble head furnished with radially-divergent teeth and a fixed circular head, termed the “presser-block.”

My improvements relate to the operation and adjustment of the block which co-operates with the revolving head—first, in the mechanism by which the pressure of said block upon the rand in process may be adjusted to any degree, more or less; secondly, in the adjusting device by which the distance between the toothed head and the presser-block can be instantly changed to conform to the varying thickness of the material from which the rands are to be made, while the pressure continues substantially the same, and, thirdly, in the general arrangement and relation of the parts to each other for convenience of operation, as likewise for removal of the head when the teeth are to be ground or when repairs are needed.

The drawings herewith annexed represent, in Figure 1, a plan of a rand-forming machine embodying my invention. Fig. 2 is a side elevation. Fig. 3 is a longitudinal sectional elevation of the machine in part, showing the operative parts enlarged, the guard-plate being omitted.

In said drawings, 2 represents the frame or

standard of the machine, in which is mounted a horizontal arbor 3, one end of which is furnished with a removable head 4, the active face of which is armed with radially-divergent teeth. The other end of said arbor has mounted upon it a fast pulley 4, whereby the necessary rotation is imparted to said head. A loose pulley is also provided.

Laterally secured to the machine-frame by the bolts 5 5 is an independent bracket 6, provided with a tubular arm or sleeve 7, which is axially aligned with the arbor 3. This sleeve serves to support and contains a cylindrical spindle 8, recessed in part to receive a coiled spring 9. Said spindle, at its end adjacent to the toothed head, is enlarged and terminates in a plate or block 10, the vertical face of which is slightly crowned or cone-shaped, the central part being the apex. This is to make the space which exists between the presser-block 10 and the toothed head conform in shape to the cross-section of the skived rand-blank, the latter being tapered or wedge-shaped. Further, said bracket incloses the toothed head and is apertured to permit the blanks to be fed to the machine.

To enable the pressure to be quickly varied, I have secured a removable cap 12 to the end of the bracket-sleeve, and screw-tapped the same to engage an adjusting-screw 13. Thus the tension of the spring can be increased or diminished and the pressure exerted upon the rand varied.

The second feature in my improvements is in changing the relative position of the presser-block with respect to the toothed rotary head without materially affecting the pressure upon the rand. This result is obtained by pivoting a lever 14 beneath the bracket. Said lever is furnished with an upward-projecting prong 15, which enters a hole 16 in the shell of the spindle 8. Moreover, a screw 17, transversely of the lever and engaging therewith, rests exteriorly of and beneath the sleeve. By advancing the screw against the latter the lever is depressed, which act causes a slight rearward or retreating movement of the presser-block and increases the space between the co-operating surfaces which operate to shape the rand. Withdrawal of the screw 17 permits the lever to rise slightly, and the

presser-block advances to diminish the space through which the rand-blank is to be passed. It is evident that this slight movement does not materially affect the tension of the spring 9; and herein consists one of the advantages obtained by my invention.

In connection with the discharge of the blanks from the machine I have created an oblique opening 18 in the periphery of the presser-block, said aperture diverging from the meeting faces of the presser-block and the toothed head. To provide for the position and proper discharge of the rands, when completed, from the machine, I have provided a removable throw-off plate 19, which is placed vertically in front of said head and forms one of the sides of the discharge-opening 18. Thus by reference to Fig. 2, the rand-blank, tapered edge up, is introduced between the throw-off plate and revoluble head, and then advanced until gripped between the lowermost operating-surfaces of the said head and the presser-block. Further, to aid the machine in delivering the finished rands and to maintain the blank in a curved path during its forming and crimping, a semicircular boss 20, composing part of the bracket 6, is located in the rear or at a point opposite that where the blanks are entered.

The operation is as follows, the parts being in the positions shown in Fig. 3 of the drawings: The tension of the spring is first regulated by the screw 13 to insure proper thrust of the presser-block upon the rand-blank, after which its position with respect to the rotary head is adjusted by the lever 14 and its screw 17, according as heavy, medium, or light stock is to be worked. The arbor is now caused to rotate, as indicated in Fig. 2, and the skived rand-strips are entered between the rotary head 4 and the inside face of the throw-off plate 19. The blank, held with the tapered edge up, is now advanced until seized between the lowermost surfaces of the revolving toothed head and the presser-block, then bent, its thin edge being crimped by the teeth of the head into a circular form, the strip being compelled to advance in a curved path by contact with the face of the boss 20 in the rear, and thence carried upward until it contacts with the throw-off plate, set slightly inclined to the face of the rotary toothed head, when it is discharged by way of the opening 18 in a completed state.

It is to be noticed that the toothed head 4 can be removed from the arbor. Thus when

the necessary regrinding of the radial teeth occurs the arbor is not disturbed, while the head can be removed very quickly. This is effected by unscrewing the bolts 5 5, when the bracket with all its parts are free to separate from the standard, the bracket being slipped endwise to disengage the rotary head from that portion of the bracket by which it is surrounded.

Gradual wearing away of the rotary head, due to the grinding of the crimping-teeth, necessitates some adjustment in order to maintain the proper relation between said head and the presser-block. Hitherto this has generally been effected by advancing the arbor and head. However, by my improvements this adjustment is very simply effected by withdrawing the screw 17, allowing its lever to rise, and permitting the presser-block to advance toward the rotary head. The tension of the spring may then be restored by means of the adjusting-screw 13.

What I desire to claim is—

1. In a rand-forming machine, the standard, a revoluble arbor, and a removable toothed head thereon, combined with a sleeve-bracket separable from the standard, a hollow spindle axially aligned with the arbor, the presser-block upon said spindle, and means for controlling pressure upon the presser-block, as likewise means—namely, a screw-actuated lever—to effect its endwise travel, substantially as herein described.

2. The combination, with a radially-toothed revoluble head, a presser-block co-operating therewith, and the hollow spindle which carries said block, of the spring actuating said spindle and block and the lever with its prong which engages said spindle to control the endwise movement of the block, substantially as and for the purposes herein stated.

3. In rand-forming machines, a revoluble head 4, having radially-divergent teeth, the co-operating spring presser-block 10, adjustable with respect thereto, the standard 2, and its separable bracket 6, composed of the sleeve 7 and boss 20, combined with the lever 14, its actuating-screw 17, the screw 13, to regulate the pressure, and the throw-off plate 19 upon the bracket, substantially as herein specified.

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

FRANCIS P. ARNOLD.

Witnesses:

CHARLES TAMER,
H. E. LODGE.