

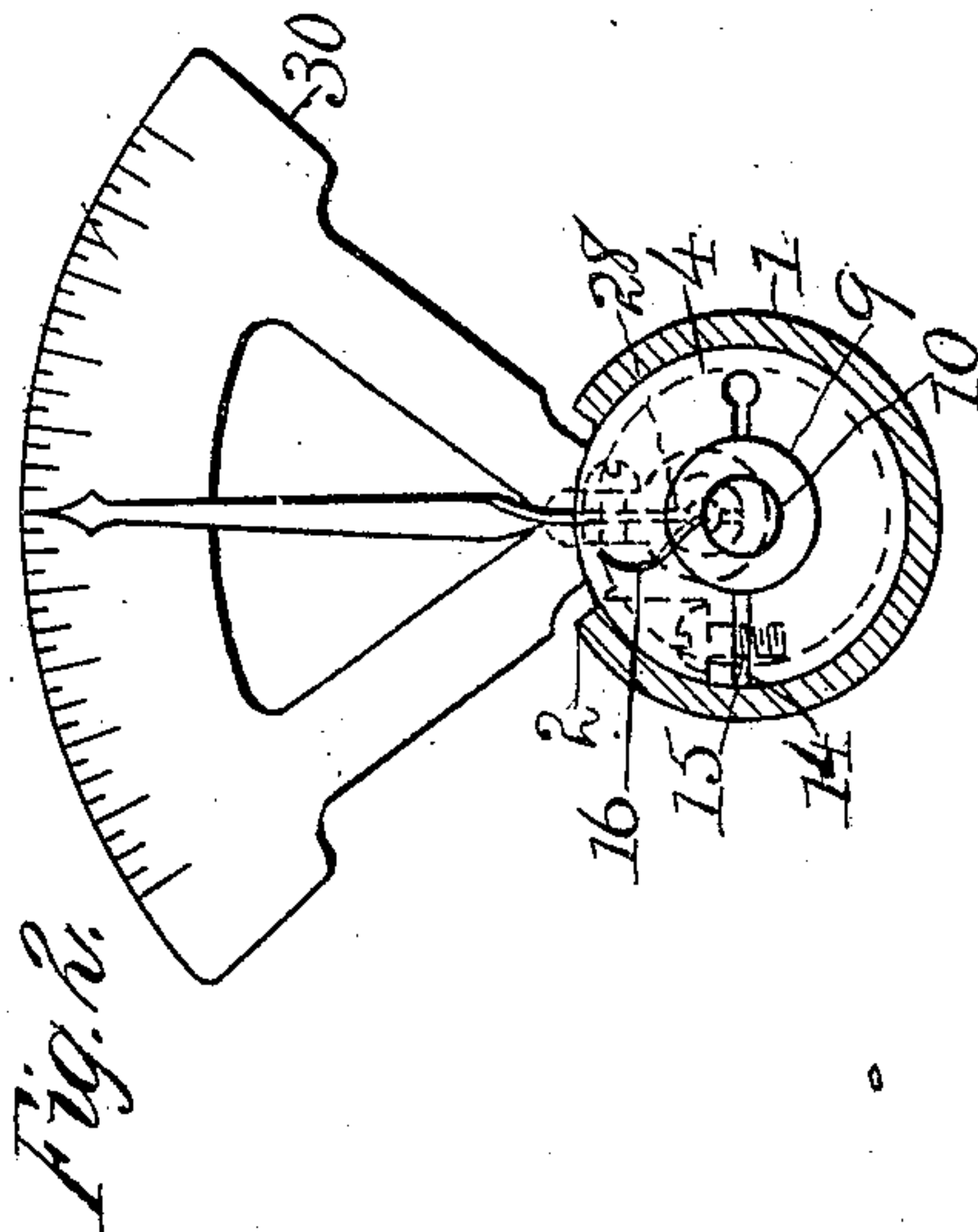
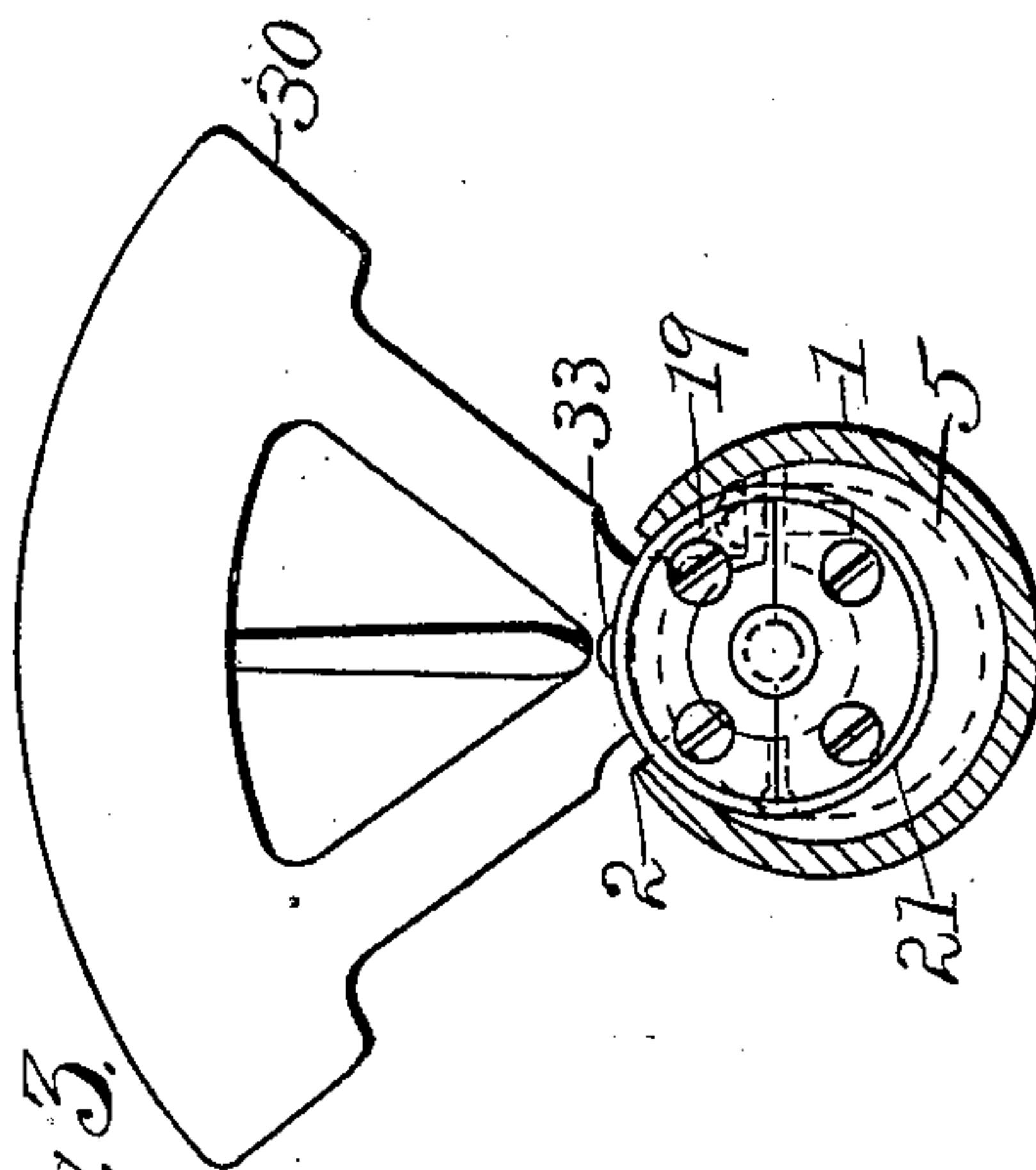
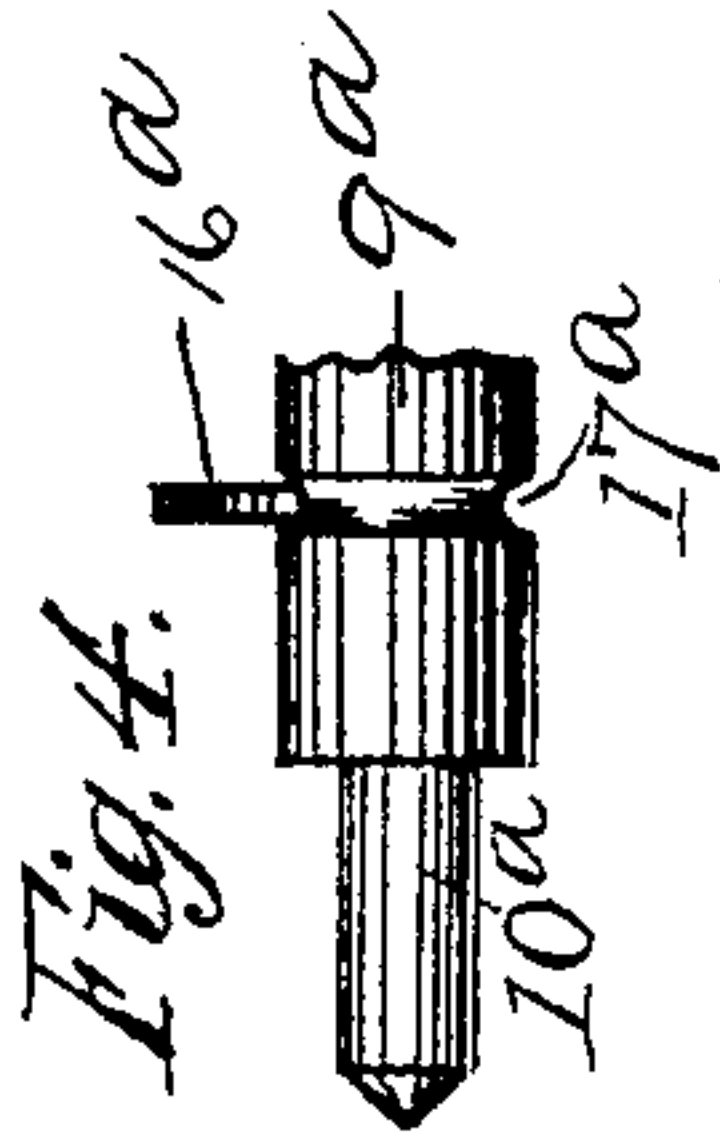
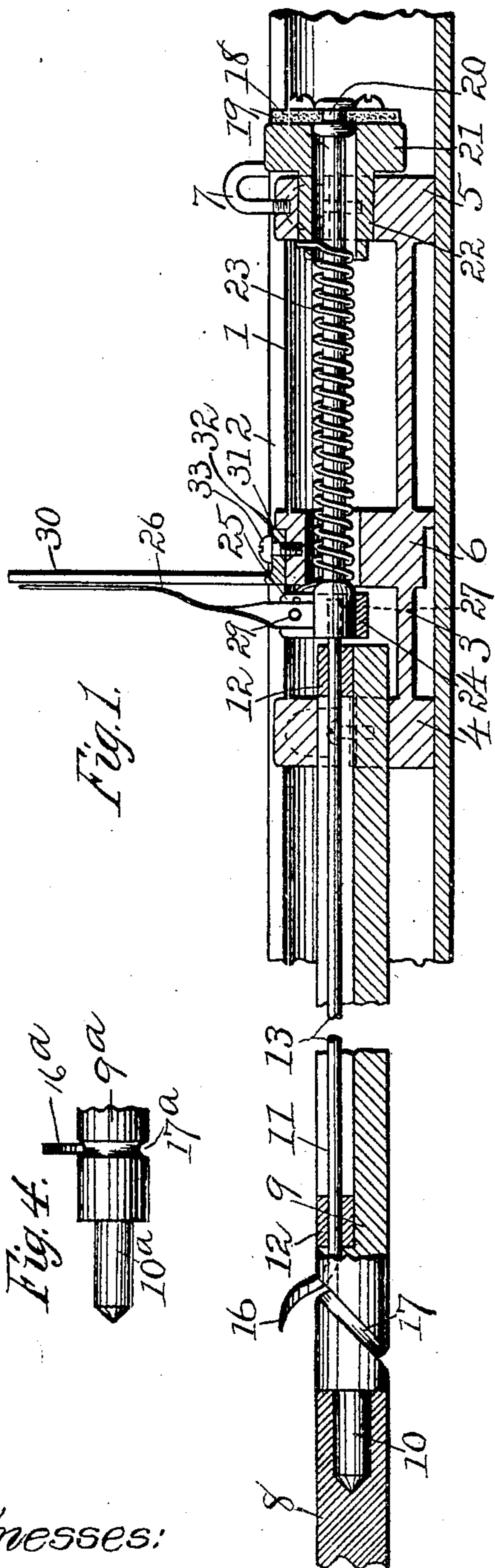
No. 832,152.

PATENTED OCT. 2, 1906.

H. J. NICHOLS.

MACHINE FOR STRAIGHTENING GUN BARRELS.

APPLICATION FILED NOV. 15, 1906.



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UNITED STATES PATENT OFFICE.

HENRY J. NICHOLS, OF MIDDLETOWN, CONNECTICUT.

MACHINE FOR STRAIGHTENING GUN-BARRELS.

No. 832,152.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed November 15, 1905. Serial No. 287,411.

To all whom it may concern:

Be it known that I, HENRY J. NICHOLS, a citizen of the United States, and a resident of Middletown, in the county of Middlesex and State of Connecticut, have invented a new and Improved Machine for Straightening Gun-Barrels, of which the following is a specification.

My invention relates more especially to the class of devices used for truing up or straightening tubes; and the object of my invention is to provide an inexpensive device of this class and one extremely simple in its method of operation; and a further object is to provide a machine of this class in which the slightest defects with respect to trueness in a tube may be readily detected. A form of device in the use of which these objects may be attained is illustrated in the accompanying drawings, in which—

Figure 1 is a view in central lengthwise section of a portion of a machine embodying my invention. Fig. 2 is a view in cross-section through the device shown in Fig. 1 on a line located at the left of the graduated plate and looking toward the same and also showing the end of one section of the indicator-bar. Fig. 3 is a like view on a line at the right of the graduated plate and looking toward the same. Fig. 4 is a detail view showing a modified form of the invention.

The machine illustrated and described herein is of the general character as that shown and described in United States Letters Patent issued to me July 25, 1905, No. 795, 300, and is an improvement on said machine. Only so much of the device as is essential to a perfect understanding of my invention is illustrated and described in the drawings herein, reference being had to the above-mentioned patent for a complete understanding of the machine as a whole.

In the accompanying drawings the numeral 1 denotes an indicator-sleeve in which the parts are directly mounted. As shown in the patent hereinabove referred to, this tube is partially supported in the head or tail stock of a lathe, said stock having an opening into or through which the tube may extend, the head and tail stocks being provided with suitable means for supporting a tube and the machine also being provided with means for straightening the tube. This indicator-sleeve has a slot 2 extending lengthwise thereof, preferably in the upper surface, through which parts of the mechanism extend.

An indicator-bar base 3 is located within the indicator-sleeve, and this base includes an indicator-bar bearing 4, an indicator-shaft bearing 5, and a dial-support 6. These parts are preferably made integral with the base and are so located as to have an easy sliding movement within the sleeve 1, this sliding movement being imparted as by means of an arm 7, which is operated as described and fully set forth in my previous patent.

An indicator-bar, including a section 8, secured at one end of the machine, and a section 9, these sections being suitably joined, as by means of a pin 10 engaging a similarly-formed recess in the section 8, is located in use within the tube to be straightened. This indicator-bar has a recess 11 containing bearings 12 for an indicator-shaft 13. The indicator-bar bearing 4 is split, as at 14, and a screw 15 is employed for drawing the parts together to securely bind the indicator-bar therein.

The indicator-shaft 13 is suitably mounted in the bearings 12 and has a feeler 16 extending from one end thereof. This feeler 16 projects transversely from the shaft 13 and is formed to fit a spirally-arranged groove 17 in the indicator-bar, and especially in the section 9 thereof. This groove is so formed that when the feeler is in one position it is located entirely within the groove 17. The groove 17 and the feeler 16 are so arranged that they may extend transversely to the rifling in a gun-barrel, so that as the latter is turned to determine its trueness the feeler will pass across the groove of the rifling. This feeler is also formed, as to that part which will contact with the inner surface of the gun-barrel, practically on the arc of a circle the same as that on which the inner surface of the barrel is formed, so that when the feeler encounters the groove of the rifling it will not jump, but will pass smoothly across the groove. The shaft 13 is so mounted in the indicator-bar that it will be located eccentrically to a tube being operated upon, so that as the shaft 13 is turned the feeler 16 will encounter the interior surface of the tube.

An extension 18 of the shaft 13 is mounted at one end in a bearing 19. This bearing consists of a disk separated on the line of its diameter, as shown in Fig. 3, and having a central opening, the edges of which fit within a groove 20 in the end of the section 18 of the indicator-shaft. The disk 19 is suitably secured, as by means of screws, to the head 21

of an adjusting-sleeve 22, mounted in the bearing 5. A spring 23 has one end secured to the sleeve 22, the latter serving as a means of adjusting the tension of the spring. The other end of this spring is secured to a clamp 24, mounted on the end of the section 18 of the indicator-shaft. This clamp is split on one side, as at 25, and a pointer 26 has its inner end located within the split portion of the clamp. This end of the section 18 of the indicator-shaft has a recess 27, into which the section 13 projects, and a slot 28, extending into the recess, providing means for securing the end of the section 13 therein. A screw is inserted through the hole 29, binding the clamp upon the end of the section 18, and thus securing the part 13 to the shaft 18 and also securing the pointer 26 in place.

The dial 30 has a foot 31 located on the dial-support 6. This foot has a slot 32, through which a screw 33 extends, so that the dial may be adjusted circumferentially on the support 6. The dial 30 is graduated, as shown in Fig. 2, and it will be readily understood that when the feeler 16 is located within a gun-barrel or tube and the latter turned, if said tube is perfectly true there will be no movement of the pointer 26 across the face of the dial. If, however, there is any untrueness in the barrel, said pointer will move back and forth across the face of the dial and by means of the graduations marks the extent of the untrueness may be determined, and by means of suitable tools the tube may be straightened until the pointer shows no untrueness in the tube.

In the form of device shown in Fig. 4 the indicator-bar 9^a, having the pin 10^a, has a groove 17^a, which instead of being spirally formed, as shown in Fig. 1, is located at right angles to the recess 11, and the feeler 16^a is so located on the bar 13 as to fit this groove 17^a.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A support for an indicator-bar, an indicator-bar mounted on the support to be projected into a tube, said bar having a lengthwise recess and a laterally-extending groove, an indicator-shaft located within said recess, a feeler extending from the shaft and adapted to be located in said groove, and indicating devices connected with said shaft.

2. A support for an indicator-bar, the indicator-bar mounted in the support to be projected into a tube, said bar having a transversely-arranged groove, an indicator-shaft mounted on the bar, a feeler extending from the shaft and adapted to be located in said groove, and indicating devices connected with said shaft.

3. A support for an indicator-bar, an indicator-bar mounted in the support to be projected into a tube, and having a spirally-arranged groove, an indicator-shaft mounted in the bar, a feeler extending from the shaft

and formed to lie within said groove, and indicating devices connected with said shaft.

4. In a support for an indicator-bar, a sleeve, a bearing located within and movable along said sleeve and including a clamp for one end of an indicator-bar, and a bearing for one end of an indicator-shaft, an indicator-bar with one end clamped to said support, an indicator-shaft mounted in the bar and with one end supported in said bearing, a feeler extending from the shaft, and indicating devices connected with the shaft.

5. A support for an indicator-bar, an indicator-bar mounted in the support, an indicator-shaft formed in sections, one section being mounted in the bar and the other section secured to the first section and extending beyond the bar, means for mounting the second section of the shaft, a feeler secured to the shaft, and indicating devices secured to the shaft.

6. Means for supporting an indicator-bar, the indicator mounted in the support, a sectional indicator-shaft, one section of which is mounted in the indicator-bar and a second section extending beyond the bar and clamped to the first section, means for mounting the outer end of the shaft, a feeler projecting from the shaft, and indicating devices connected with the shaft.

7. A support for an indicator-bar, the indicator-bar mounted in the support, an indicator-shaft mounted in said bar and extending beyond the end thereof, a feeler projecting from said shaft, an adjusting-sleeve forming a bearing for said shaft, a spring exerting tension on the shaft and with one end secured to said sleeve, and indicating devices connected with the shaft.

8. A support for an indicator-bar, an indicator-bar mounted in the support, an indicator-shaft mounted in the bar, a feeler projecting from said shaft, an adjusting-sleeve forming a support for one end of the indicator-shaft, a disk secured to said sleeve and fitting a groove in the shaft, a spring having one end secured to the sleeve and the opposite end connected with said shaft, and indicating devices connected with the shaft.

9. A support for an indicator-bar, the indicator-bar mounted in the support, an indicator-shaft mounted in the bar and formed in sections, a feeler projecting from said shaft, a socket in one section of the shaft for receiving the opposite section, means for securing one section within said socket, and indicating devices connected with the shaft.

10. A support for an indicator-bar, the indicator-bar mounted in the support, an indicator-shaft mounted in the bar and formed in sections, a feeler extending from said shaft, one section of the shaft having a socket to receive the end of the other section, a clamp for binding the two sections together, and a pointer secured to said clamp.

11. A support for an indicator-bar, an indicator-bar mounted in the support, an indicating-shaft mounted in the bar, indicating devices connected with said shaft, and a dial 5 adjustably mounted with respect to the pointer. from said shaft, an indicating-pointer secured to said shaft, a dial-support located within the sleeve, and a dial secured to said support and adjustable laterally of the sleeve.

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Witnesses:

12. An indicator-sleeve, an indicator-bar projecting within the sleeve, an indicator-shaft mounted in the bar, a feeler projecting

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