

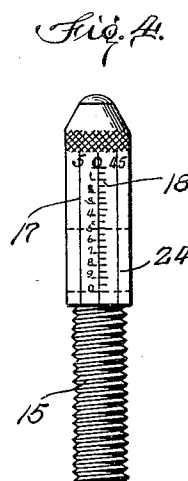
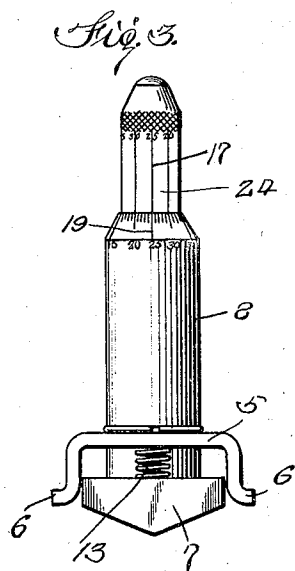
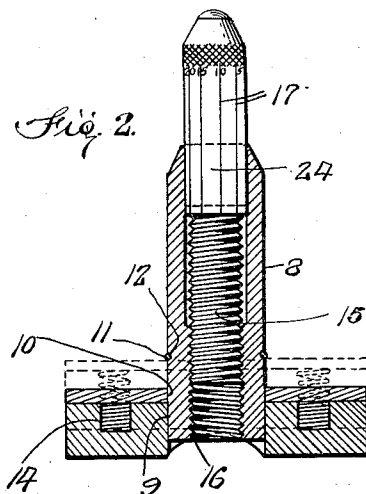
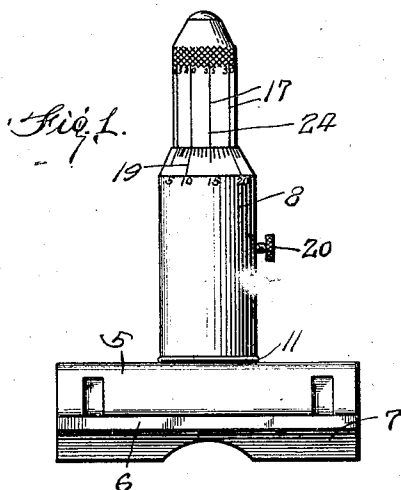
Apr. 24, 1923.

1,452,780

L. O. BEARD

MICROMETER CALIPER

Filed June 24, 1922



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UNITED STATES PATENT OFFICE.

LAWRENCE O. BEARD, OF LANCASTER, PENNSYLVANIA.

MICROMETER CALIPER.

Application filed June 24, 1922. Serial No. 570,664.

To all whom it may concern:

Be it known that I, LAWRENCE O. BEARD, a citizen of the United States of America, residing at No. 238 East Marion Street, in the city of Lancaster, in the county of Lancaster and State of Pennsylvania, have invented certain new and useful Improvements in Micrometer Calipers, of which the following is a specification.

My invention relates to micrometer-calipers, and has for its primary object to provide a simply constructed and conveniently manipulated instrument for measuring the inside dimensions of internal combustion engine cylinders and the like.

Another object of my invention is to provide an instrument of this character which may be readily employed for height measurements.

Another object of my invention is to provide a micrometer-caliper which is self centering and self aligning.

A still further object of my invention is to provide two sets of vertical graduations one on the stationary sleeve and the other on the rotating spindle whereby the length adjustment of the spindle as represented by horizontally disposed graduations on the spindle may be doubly checked by the user.

Other and further objects and advantages of my invention will be in part described and in part obvious as this specification is proceeded with.

In the accompanying drawings forming part of this specification:

Figure 1 is a side view of my invention;

Figure 2 is a side view of my invention partly in section showing the centering plate in compressed position;

Figure 3 is an end view of my invention; and

Figure 4 is a side view of the spindle detached from the sleeve.

Referring more particularly to the drawings 5 denotes what may be termed an inverted U-shaped base plate or alinement and centering plate, said plate formed with slightly curved or out turned sides or legs 6. This base 5 houses what may be termed a caliper or gauging block 7, herein shown to be substantially V-shaped in cross section.

An internally-threaded sleeve 8 is fixedly mounted in an aperture 9 formed in the block 7, and extends upwardly and slidingly through an aperture 10 in the base 5, said apertures being of similar size and of ne-

cessity aligned one with the other. A spring ring 11 seated in a corresponding groove 12 in the sleeve 8 slightly above the base plate 5 prevents withdrawal of the sleeve but at the same time permits of limited movement of the sleeve and the centering block 7 with respect to the base plate. Springs 13 seated in recesses 14 in the centering block and bearing at their upper ends against the underside of the base plate cushion the movement of the block 7 toward the base plate and tend to normally maintain the block in projected or Figure 3 position.

A spindle 24 has a threaded portion 15 at one end which threadedly engages the internal screw threads 16 of the sleeve. The other end of the spindle projects from the sleeve and is provided with vertical graduations 17 numbered in a clockwise direction 0, 5, 10, 15, 20, 25, 30, 35, 40 and 45 respectively, and with horizontally disposed graduations 18 numbered 1, 2, 3, 4, 5, 6, 7, 8, 9 and 0 (or 10) respectively. The upper end of the sleeve 8 is provided with graduations 19 similar to the graduations 17 on the spindle, but numbered in reverse order, from 0 to 50 respectively in a clockwise direction.

When used for measuring inside diameters, for instance the diameter of an internal combustion engine cylinder, the user inserts the tool in the cylinder (not shown) and after pressing the centering block into Figure 2 position by forcing the same against the cylinder wall, proceeds to unscrew the spindle 14 until the latter touches the opposite wall of the cylinder. The set screw 20 is then screwed up to lock the spindle 24 against accidental turning movement in the sleeve 8, and the tool removed for reading.

The distance from end to end of the tool, that is from tip of the spindle to the bottom extremity of the point of the gage block 7, when the spindle is screwed down into the sleeve as far as it will go, and when the point of block 7 is flush with the extremities of legs 6, we will assume is three inches (3 in.). At this time the graduations designated by 0 (or 50) respectively on the spindle will be in register with the vertical graduations designated by 0 (or 50) on the sleeve 8. If the spindle is now unscrewed say until the zero on the spindle coincides with the vertical graduation designated by the numeral 5 on the sleeve, the spindle will have been extended five one thousandths of

an inch, the intermediate graduations representing one thousandth of an inch. In order to check this reading the user of the tool glances at the zero on the sleeve and finds
5 that this graduation registers with the vertical graduation designated by the numeral 5 on the spindle and is thus assured that his first reading was correct. The horizontally disposed graduations 18 represent fifty one
10 thousandths of an inch, and one complete rotation of the spindle in an anti-clockwise direction extends the spindle one graduation or fifty one thousandths of an inch.

Having thus described my invention:

15 What I claim is:

1. A micrometer-caliper comprising an inverted U-shaped plate, a calipering block adapted to fit movably within said plate, a sleeve mounted on said block and extending
20 slidably through said plate, means for preventing the withdrawal of said block and said sleeve from said plate, means for cushioning the movement of said block towards said plate, and a measuring spindle rotatably mounted for relative longitudinal movement in said sleeve, said sleeve and spindle
25 having cooperating graduations thereon.

2. A micrometer-caliper comprising a plate, a calipering block associated with
30 said plate, a sleeve fixed to said block and

projecting upwardly through said plate, a measuring spindle rotatably mounted for relative longitudinal movement in said sleeve, said spindle having horizontally disposed graduations of fifty one thousandths
35 of an inch, and said spindle and sleeve having vertically disposed graduations of one thousandth of an inch numbered from zero to fifty and from fifty to zero respectively.

3. A micrometer-caliper comprising an apertured plate having legs thereon, a sleeve extending slidably through said aperture, a calipering block fixed to the lower end of said sleeve and fitting between the legs of
45 said plate, a spindle rotatably mounted for relative longitudinal movement in said sleeve, said sleeve and spindle having cooperating distance measurement graduations thereon, means for limiting the movement
50 of said block away from said plate, and resilient means for normally forcing said block away from said plate to the limit of its movement.

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

LAWRENCE O. BEARD.

Witnesses:

CHAS. G. BAKER,
GEO. ROSS ESHLEMAN.