No. 647,910. Patented Apr. 17, 1900.

# L. S. STARRETT.

## MICROMETER GAGE.

(Application filed Feb. 2, 1899.)

(No Model.)

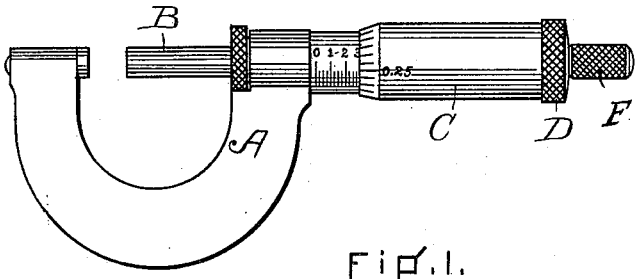


Fig. 1.

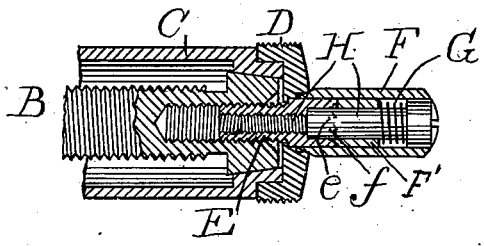


Fig. 2.

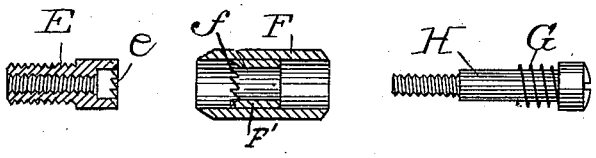


Fig. 3.

WITNESSES

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# UNITED STATES PATENT OFFICE.

LAROY S. STARRETT, OF ATHOL, MASSACHUSETTS.

## MICROMETER-GAGE.

SPECIFICATION forming part of Letters Patent No. 647,910, dated April 17, 1900.

Application filed February 2, 1899. Serial No. 704,237. (No model.)

*To all whom it may concern:*

Be it known that I, LAROY S. STARRETT, of Athol, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Micrometer-Gages, of which the following is a specification.

The object of this invention is to provide a micrometer-gage with a simplified and perfected friction ratchet device for speeding the movement of the spindle and insuring sensitiveness and uniformity of pressure upon objects to be calipered by the tool.

My invention is in the nature of an improvement in essential details of construction over the gage shown in the patent to Church, dated May 22, 1883, No. 278,094. In that device an axial stem integral with the measuring-spindle extended rearwardly therefrom and was surrounded by a tubular knob having on its inner end or edge an annular ratchet engaging with corresponding ratchet-teeth formed integral with the spindle and on the end of the rotary gage or scale. A spring between said stem and knob, adjusted by a screw entering the stem axially, pressed these exposed or uncovered ratchets into a yielding engagement when the oblique faces of the teeth came together during the forward movement of the spindle in caliper-ing an object, the spring allowing the teeth to slip when the proper pressure on the object was exceeded. The engagement was positive during the rearward movement when the engaging faces of the teeth were parallel with the axis. My improved tool works upon this general principle; but I have completely reconstructed the device, and thereby rendered it merchantable, simple, cheap, and entirely practical. I make the speeding and ratchet device distinct from the other parts of the tool and attach it thereto by its hollow screw-stem, so that the device complete may be screwed to any tool having the properly-threaded axial perforation. The ratchets are entirely inclosed by the turning sleeve, and thereby protected from the entrance of dirt between their teeth, which would soon destroy their efficiency. One member of the ratchet is formed on the end of the hollow screw-stem and the other upon the end of a central bushing fixed in the turning sleeve. Said sleeve has an enlarged chamber at each end, the forward one receiving the ratchet end of the screw-stem and the other one inclosing the spring coiled about the enlarged body of the adjusting-screw, the tip of which is threaded into said stem. The stem, sleeve, bushing, screw, and spring thus arranged comprise my inclosed detachable friction ratchet attachment.

In the drawings, Figure 1 is a side view of one of my micometer-gages provided with my present improvement. Fig. 2 is an enlarged sectional view of the parts to which my invention relates shown assembled for use, and Fig. 3 represents the parts detached.

A represents the body of the tool, B the measuring-spindle, and C the rotating barrel turning and advancing with the spindle, to which it is firmly affixed. The outer end of this barrel has a milled periphery D, as usual.

E is the hollow screw-stem, forming the first feature of my improvement. It is externally threaded to screw very firmly into an axial perforation correspondingly threaded in the outer end of the spindle B and barrel C, and it has an internal thread to receive the tip of the adjusting-screw H. The body of the screw-stem E is enlarged and has an annular ratchet *e*, formed on its extreme outer end. (See Fig. 3.)

F is the turning sleeve, the second feature of my invention, chambered at each end and having intermediately the fixed hollow bushing F′, formed at its front end with ratchet-teeth *f* to engage the teeth *e*, while the enlarged body of the hollow screw-stem E forms a bearing for the milled sleeve F and its bushing F′ to turn on.

The third feature of my improvement is the spring G and adjusting-screw H. The head of the screw forms another bearing for the sleeve F. The body of the screw and the spring coiled around it occupy the outer chamber in said sleeve, and the tip of the screw passing freely through the bushing engages axially in the screw-stem E. The spring G is compressed between the screw-head and the vertical outer end of the bushing F′, thus holding the ratchets *e f* in yielding contact. The oblique faces of the teeth engage during the forward movement of the spindle; but the spring will yield and allow them to slip by

each other when the proper calipering pressure is exerted by the spindle, so that it cannot become excessive. During the reverse movement the ratchets engage positively.

I claim as my invention—

The described friction ratchet device for micrometer-gages, comprising the detachable hollow screw-stem E, adapted to be screwed firmly into the outer end of the spindle, and formed with the terminal annular ratchet *e*, in combination with the chambered sleeve F having, intermediately, the fixed internal bushing F′ with its terminal ratchet *f*, the spring G in the outer chamber of such sleeve, and the adjusting-screw H extending through said spring, sleeve and bushing and engaging axially in said screw-stem, substantially as set forth.

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

LAROY S. STARRETT.

Witnesses:

FRANK E. WING,

ERNES. P. BARNES.