L. S. STARRETT.

MICROMETER.

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1,098,694.

Patented June 2, 1914.

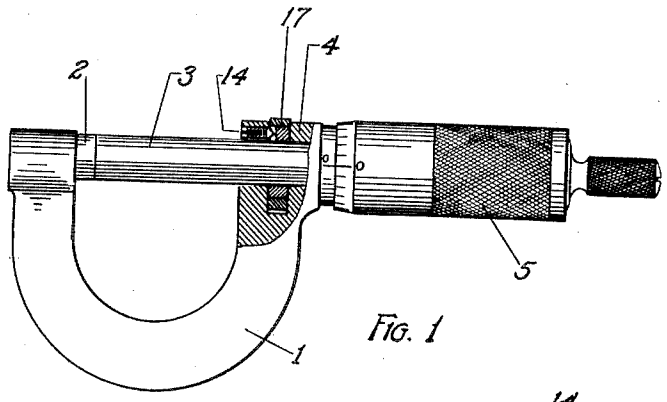


FIG. 1

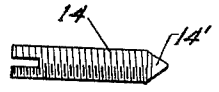


FIG. 5

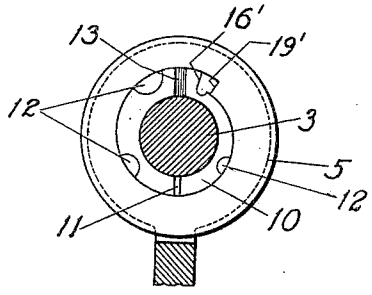


FIG 2

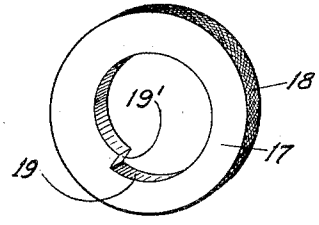


FIG. 3

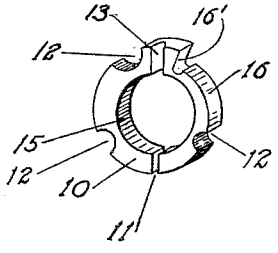


FIG. 4

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MICROMETER.

1,098,694. Specification of Letters Patent. **Patented June 2, 1914.**

Application filed February 16, 1914. Serial No. 818,864.

To all whom it may concern:

Be it known that I, LAROY S. STARRETT, a citizen of the United States, residing at Athol, county of Worcester, Commonwealth of Massachusetts, have invented certain new and useful Improvements in Micrometers, of which the following is a specification.

This invention relates to micrometers and particularly to locking devices for holding the spindle of a micrometer in any position in its adjustment. In a device of this sort in which the spindle is adjusted to secure very accurate measurements, it is of the utmost importance that the spindle be held or clamped by means which shall impart no rotative tendency by the clamping motion. It is likewise of the greatest importance that no lateral strain be brought to bear upon such a spindle in its bearing as any such strain tends to produce a play which even though small may be sufficient to destroy the accuracy of the instrument.

The object of my present invention is therefore to produce a micrometer spindle lock which shall act quickly and surely and with uniformity about the circumference of the spindle at the point at which it is to be locked. I accomplish these desired results by disposing about the spindle a pair of co-operating cam rings one inclosed within the other so that upon relative movement these cams completely and uniformly engage on all sides of the spindle.

The construction and operation of this device will be more fully described in the specification which follows.

In the drawings which form a part of the specification I have shown a preferred embodiment which I have found not only well adapted to practical use but also well adapted to commercial production.

Throughout the specification and drawings, like reference numerals are employed to indicate corresponding parts, and in the drawings: Figure 1 is a side view of a micrometer with a portion of the hub broken away to expose the locking device. Fig. 2 is a section on an enlarged scale through the hub exposing the locking mechanism, Fig. 3 is an enlarged perspective view of the external operating ring removed, Fig. 4 is a similar view of the internal split ring removed, and Fig. 5 is an enlarged detail of the screw employed to hold the split ring against rotative movement.

My device consists of the usual frame 1 having an anvil 2 and a movable spindle 3 working through a bearing 4 and operated by a usual sleeve 5. The bearing 4 is transversely slotted as is the usual practice in this art, and within this transverse slot and surrounding the spindle is located the split sleeve 10 which is entirely cut across at 11 and weakened by cut-outs at 12. This distribution of the cut outs 12 is such as to secure uniform flexibility of the sleeve with minimum resistance to the compressive force of the operating ring. This sleeve has on one face a slot 13 which is engaged by the point 14^1 of a screw 14 which is let into the upper face of the bearing 4. The slot 13 is a V-slot and extends radially across the face of the sleeve 10. The point of the screw is made more blunt than the sharp V slot so that it will have a bearing on the walls of the V slot which holds it against movement. With this shape of the slot the parts may be assembled more easily. The interior of the ring 10 is formed with a smooth, cylindrical spindle engaging bore at 15 and the exterior is formed with an involute surface 16. The involute terminates in a radial shoulder 16^1 which opposes and acts as a stop for a similar shoulder 19^1 oppositely disposed on the ring 17. (See Fig. 2.)

Surrounding the sleeve 10 is the operating ring 17 having knurled surface 18 and a continuous inner bearing surface 19 developed as an involute terminating in a radially faced shoulder 19^1. The interior bearing 19 of the outer ring 17 is just enough larger than the exterior bearing 16 of the split ring 10 to inclose it with a slight free play to assure the full release of the split ring 10 when the spindle is to be unlocked but close enough to be quickly tightened upon a partial rotation of the ring 17. The compression thus exerted by the ring 17 on the split ring 10 is practically uniformly distributed about the spindle 3. On account of its equalizing radial action from all sides the rotative effect is negligible.

Various modifications in the form and construction of my device may obviously be resorted to, all without departing from the spirit of my invention, if within the limits of the appended claims.

What I therefore claim and desire to secure by Letters Patent is:

1. In combination with the spindle of a

micrometer, a spindle lock comprising a split ring encircling said spindle and having its exterior surface formed as an involute, means for holding said split ring against rotation and an operating ring inclosing said split ring and having its inner face formed in an inclosing involute.

2. In combination with the spindle of a micrometer, a spindle lock comprising a split ring encircling said spindle and having its exterior surface formed as an involute of one revolution with the ends connected by a radial shoulder, means for holding said split ring against rotation and an operating ring inclosing said split ring and having its inner face formed in a similar involute contacting with the first and having a shoulder opposing the first to act as a stop.

3. In combination with the spindle of a micrometer, a spindle lock comprising a split ring encircling said spindle, means for holding said split ring against rotation and an operating device having a surface engaging a coacting surface of the ring, the distance of the successive elements of said surfaces from the center of the ring progressively increasing circumferentially.

4. In combination with the spindle of a micrometer, a spindle lock comprising a compressible member encircling said spindle, means for holding said compressible member against rotation and an operating device having a surface engaging a coacting surface of the compressible member, the distance of the successive elements of said surfaces from the center of the ring progressively increasing circumferentially.

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

LAROY S. STARRETT.

Witnesses:
FRANK E. WING,
WILLARD G. NIMO.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."