No. 806,594. PATENTED DEC. 5, 1905.

L. S. STARRETT.

SPINDLE LOCK FOR MICROMETER GAGES, &c.

APPLICATION FILED MAR. 23, 1905.

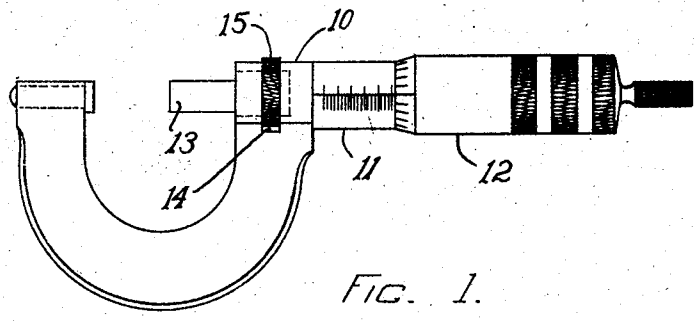


FIG. 1.

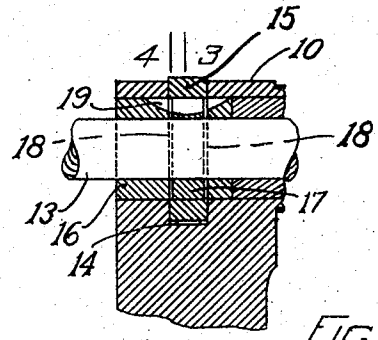


FIG. 2.

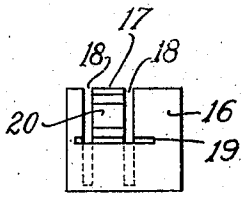


FIG. 5.

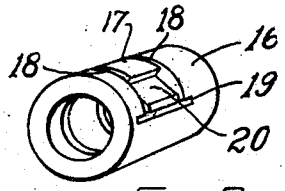


FIG. 6.

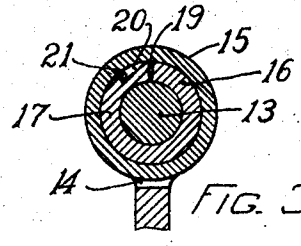


FIG. 3.

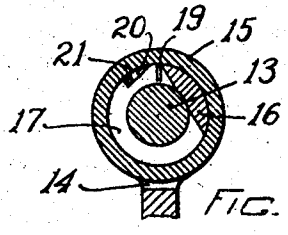


FIG. 4.

WITNESSES
A. T. Palmer
S. B. Shackford

INVENTOR
Laroy S. Starrett
BY
A. O'Brien
ATT'Y.

ANDREW B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

LAROY S. STARRETT, OF ATHOL, MASSACHUSETTS, ASSIGNOR TO L. S. STARRETT COMPANY, OF ATHOL, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

SPINDLE-LOCK FOR MICROMETER-GAGES, &c.

No. 806,594. Specification of Letters Patent. Patented Dec. 5, 1905.

Application filed March 23, 1905. Serial No. 251,591.

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 Spindle-Locks for Micrometer-Gages, &c., of which the following is a specification.

The object of this invention is to provide at small cost a simple and most efficient device for locking a rotatable shaft or spindle in its bearing, so as by a very slight rotary movement to hold the shaft or spindle in any given adjusted position.

My especial purpose is, as herein illustrated, to perfect the ordinary micrometer-caliper by furnishing it with my improved locking device.

My improvement consists in a cylindrical bushing firmly secured in the tool-head or bearing portion of a micrometer-body surrounding its rotatable spindle and having between its tubular end portions an annular spring-tongue integral with and nearly severed from said end portions in parallel transverse planes and nearly or quite severed at one end in a longitudinal or axial plane and weakened to permit a slight yielding or spring action at that end of the tongue, said tongue having near such longitudinal plane of severance a flat-bottomed peripheral recess deepest at its radial inner end and decreasing thence outwardly, the plane of its bottom being preferably the half-chord of a short arc and terminating abruptly, in combination with a minute bar or roller located longitudinally in said recess with its ends adjacent to the inner walls of the end portions of said bushing and with an actuating-ring fitting rotatably into a transverse slot in the tool-head and loosely around said annular tongue and the roller inclosed in its recess.

In the drawings, Figure 1 is a side elevation of a micrometer-caliper provided with my improvement. Fig. 2 is an enlarged longitudinal section through the tool-head and locking device. Figs. 3 and 4 are transverse sections taken, respectively, on lines 3 and 4, Fig. 2. Fig. 5 is a side view, and Fig. 6 a distorted perspective, of the bushing detached.

In Fig. 1, 10 represents the tool-head at one end of its curved body, 11 the fixed cylindrical shell projecting from the head, and 12 the rotatable sleeve surrounding said shell, both being accurately graduated in a manner well known in instruments of this class. The spindle 13 is secured at its inner end for rotation with said sleeve and has a threaded engagement within shell 11 of a pitch corresponding to the graduations on said shell.

In applying my improved locking device to a rotatable shaft or caliper-spindle I form through the bearing portion or head 10 a transverse slot 14 perpendicular to the spindle-axis. I then place within said slot a milled ring 15, snugly fitting between the slot-walls and extending radially slightly beyond the periphery of the bearing or head, and I introduce axially into said bearing or head and through ring 15 a cylindrical bushing 16 of peculiar construction and secure it firmly within head 10, said ring being rotatable in slot 14 around such bushing. Between the end portions of bushing 16 and integral with it I form an annular spring-tongue 17 in the plane of but slightly narrower than ring 15 by sawing two deep parallel transverse slots 18, as best shown in Figs. 5 and 6, such slots nearly severing the bushing, as in Fig. 4, which is a section in the plane of one of these slots. A deep longitudinal saw-cut, slot, or groove 19 at one end of slots 18 and a peripheral recess 20 adjacent thereto so weaken the ring-shaped tongue that at that point it may be pressed slightly inward into binding contact with the inclosed spindle, so as to prevent its rotation. The recess 20 (best shown in Fig. 6) has a flat bottom and radial inner end wall extending the full width of the tongue, said bottom preferably forming the half-chord of a short arc and said recess diminishing in depth from such end wall and disappearing near slot 19. Within this recess and adjacent to its longitudinal or radial inner end wall the minute movable clamping piece or roller 21 is held by the inclosing rotatable ring 15, its diameter being just equal to the depth of the recess at its inner end. (See Figs. 3 and 4.) The ring is therefore free to rotate to the left, such movement keeping the roller against the radial wall of the recess; but the slightest rotation in the opposite direction, even the twenty-fifth part of a revolution, moves the roller forward toward the shallower part of the recess with a wedging action, which springs that part of the tongue inwardly and locks the spindle firmly. A similarly-limited re-

verse movement of ring 15 instantly releases the grip upon the spindle.

I claim as my invention—

1. The described locking device for a rotatable shaft or spindle, comprising a bearing or tool-head formed with a deep transverse slot, a cylindrical bushing inserted axially and fixed in position in such bearing or head, bored to fit the inclosed shaft or spindle, and having between its rigid end portions and in the plane of said slot an annular spring-tongue integral with but nearly severed from such end portions and formed with a peripheral recess deepest at its abrupt inner end, decreasing in depth outwardly therefrom in a plane flat bottom, in combination with a movable clamping-piece located longitudinally in said recess, its diameter being equal to the greatest depth thereof, and with an actuating-ring fitting rotatably in the tool-head slot and around the recessed tongue and inclosed piece substantially as set forth.

2. In a micrometer-gage the tool frame or head, the rotatable spindle and micrometer mechanism, a deep transverse slot in the tool-head and an actuating-ring located in such slot and concentric with the spindle, in combination with a hollow cylindrical bushing passing longitudinally through the annular space between the spindle and said ring and secured peripherally in the tool-head, such bushing having, integral with and intermediate between its end portions, an annular tongue nearly severed from said portions, laterally, in parallel planes and transversely weakened, such tongue having a shallow peripheral recess, deepest at its radial inner end and decreasing thence outwardly, its flat bottom forming the half-chord of a short arc, and a roller of a diameter equal only to the greatest depth of such recess held movably therein and operated by said actuating-ring, for the purpose set forth.

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

LAROY S. STARRETT.

Witnesses:
FLORENCE E. BOYCE,
FRANK E. WING.