

L. S. STARRETT & J. A. ADELL.
SPINDLE LOCK FOR MICROMETER GAGES, &c.
APPLICATION FILED SEPT. 9, 1907.

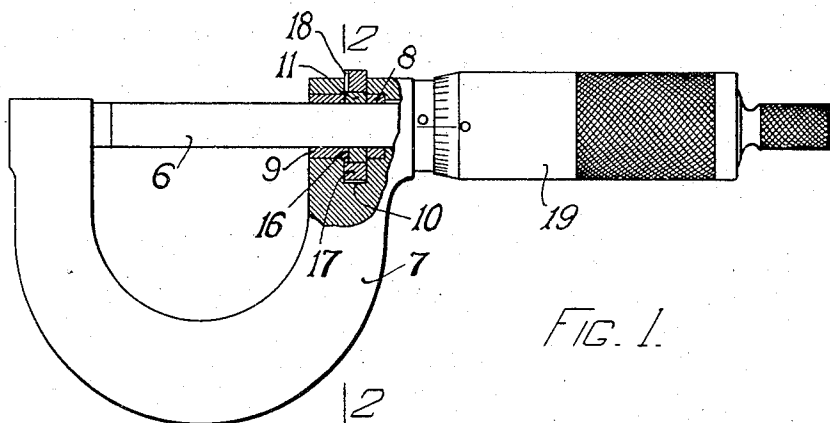


FIG. 1.

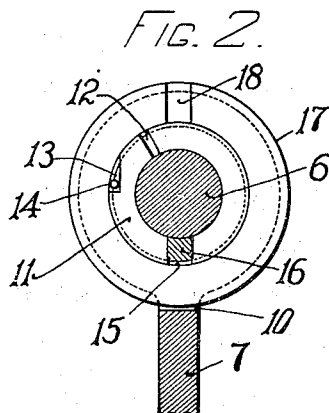


FIG. 2.

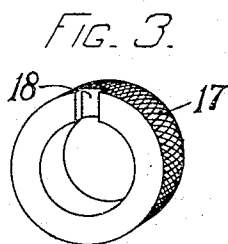


FIG. 3.

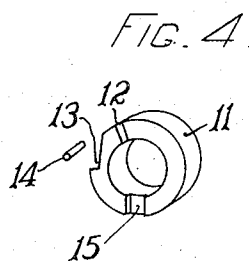


FIG. 4.

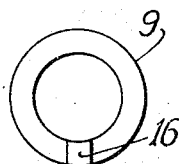


FIG. 5.

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SPINDLE-LOCK FOR MICROMETER-GAGES, &c.

No. 873,626.

Specification of Letters Patent.

Patented Dec. 10, 1907.

Application filed September 9, 1907. Serial No. 391,885.

To all whom it may concern:

Be it known that we, LAROE S. STARRETT and JOHN A. ADELL, both 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.

This invention is in the nature of an improvement upon that set forth in U. S. Patent No. 806,594, granted to L. S. Starrett and dated Dec. 5, 1905, for improved spindle locks for micrometer gages, etc. In said patented device the spindle bearing or head of the tool had a fixed tubular bushing surrounding the movable spindle and formed midway of its length with a yielding clamping tongue, integral with but nearly severed, in parallel transverse planes, from such bushing. Said tongue had a flat-bottomed peripheral recess of diminishing depth, inclosing a minute roller as a locking piece, and an actuating ring, surrounding such tongue and roller, was fitted to rotate in a transverse slot in the tool head to actuate and release the clamp, by moving said roller toward and away from the shallower part of its recess. With our improvements a similar action takes place, but the construction is simplified by making the locking or clamping ring separate from the bushing and adapted, with the roller and actuating ring in position, to be introduced, by an edgewise movement, into the transverse slot in the tool-head, and similarly removed if required, when the spindle is not in place. The clamp is held from rotation with the actuating ring by lateral engagement with the adjacent end of the bushing.

In the drawing Figure 1 is an elevation, partly in section, of a micrometer gage embodying our invention. Fig. 2 is an enlarged transverse section on the line 2—2 of Fig. 1. Figs. 3 and 4 are perspective views, respectively, of the ring and locking piece,—the minute roller being shown in the recess therefor in Fig. 2 and beside such recess in Fig. 4. Fig. 5 is a representation, on the same scale as Fig. 2, of the inner end of the bushing with its projection for engaging the locking piece.

The tool having a rotatable spindle 6 will be of any usual construction, aside from the bushing and locking devices.

7 represents a micrometer frame having

within its head a fixed tubular bushing surrounding the spindle, and shown in Fig. 1 as formed in 2 parts, 8 and 9, say one-eighth inch apart,—the innermost part 8 being first inserted and permanently secured, or it may be integral with the head. A transverse slot 10 is formed through the tool-head in the plane of the space between the two bushing members, the outer member 9 which is the effective bushing being subsequently inserted endwise and fixed permanently in place. The slot 10 is formed to permit edgewise insertion and operation of the locking parts and their removal at any time required, by reason of wear or otherwise.

11 represents the clamping piece proper, a flat, elastic steel ring surrounding the spindle, severed as at 12 to permit slight compression; formed with a shallow peripheral recess 13, to receive the little roller 14, such recess having one abrupt or radial wall and a substantially flat bottom forming the half chord of a short arc, said clamping piece having also a lateral slot 15, Fig. 4, to engage a corresponding projection 16 formed on the adjacent face of bushing 9. Such engagement prevents rotation of clamping piece 11, but does not interfere with the rotary movement of the actuating ring which is of larger diameter.

The actuating ring 17, located in slot 10, surrounds the clamping piece and confines roller 14 in its peripheral recess. To permit edgewise insertion of said parts, past the projection 16 which extends into slot 10, ring 17 is also formed with a lateral slot 18, see Fig. 3. When inserting or removing the parts stated, (the spindle being withdrawn,) the locking piece will be within ring 17 with their lateral slots 15 and 18 adjacent and in the same radial plane. In using the instrument spindle 6 will, of course, occupy its axial position as in Figs. 1 and 2. The rotatable barrel 19 is secured to the spindle and incloses the micrometer mechanism as usual.

The operation will be readily understood. The minute roller 14 is held by ring 17 within the recess 13 and adjacent to its radial inner end wall, the depth of said recess at that point being equal to the diameter of the roller—see Fig. 2—the ring is therefore free to rotate to the left, such movement keeping the roller against the radial wall, but the slightest rotation in the opposite direction, even the 25th 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 locking piece 11 inwardly and locks the spindle firmly. A similarly limited reverse movement of ring 17 instantly releases the grip upon the spindle.

We claim as our invention:

1. The described locking means for a movable shaft or spindle, comprising a bearing 10 or tool head formed with a deep transverse slot, a tubular bushing having its face in the plane of the wall of said slot, said bushing being formed with a projection extending beyond its face into the slot, in combination 15 with an annular yielding clamp and an actuating ring concentrically arranged in said slot, such clamp being laterally recessed, to engage with the bushing projection, and formed with a peripheral recess of diminishing 20 ing depth inclosing a locking device operated by the actuating ring, 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 25 head, a tubular bushing formed in two parts located at a distance from each other equal to the breadth of said slot, said bushing carrying a projecting stud extending into the 30 slot, in combination with an annular yielding clamp and an actuating ring surrounding the clamp within said slot, and both laterally recessed, the clamp to engage with and the 35 ring to pass freely by such stud, and with a minute locking roller held in a peripheral recess of diminishing depth in the clamping ring and adapted to be moved into locking or releasing position by a partial rotation of the actuating ring, substantially as set forth.

In testimony whereof we have affixed our 40 signatures, in presence of two witnesses.

LARROY S. STARRETT.
JOHN A. ADELL.

Witnesses:

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