L. S. STARRETT.

SPINDLE LOCK FOR MICROMETER GAGES.

APPLICATION FILED JAN. 18, 1909.

928,889. Patented July 20, 1909.

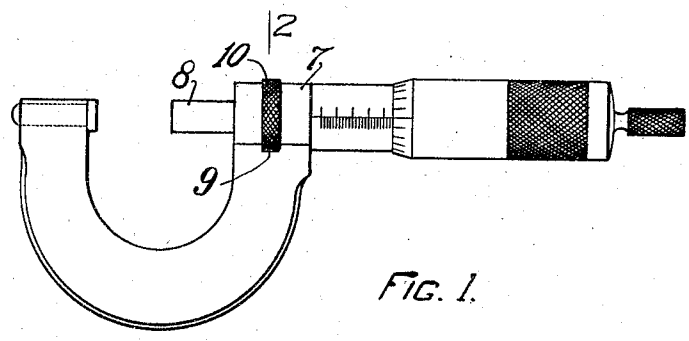


FIG. 1.

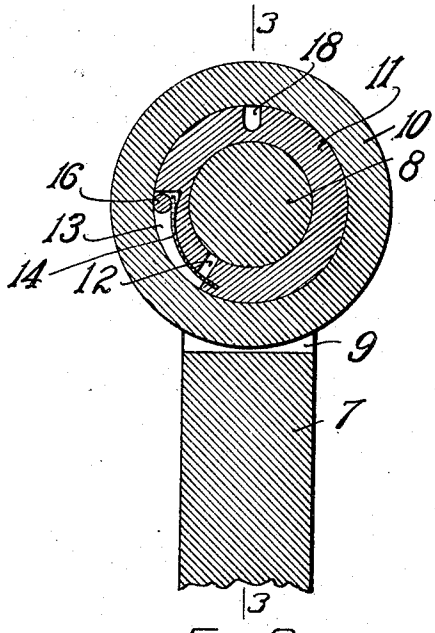


FIG. 2.

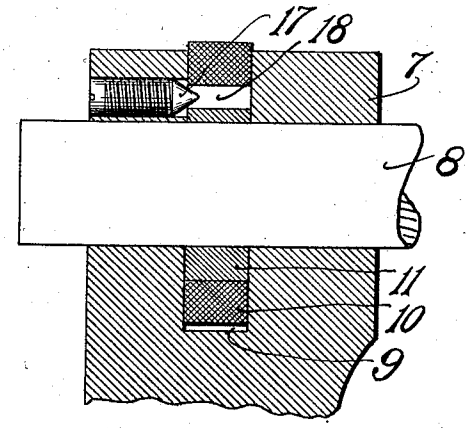


FIG. 3.

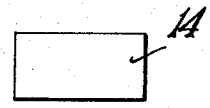


FIG. 5.

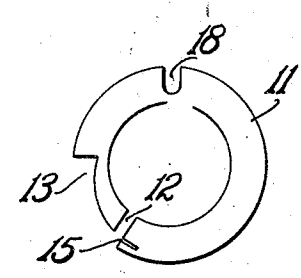


FIG. 4.

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UNITED STATES PATENT OFFICE.

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SPINDLE-LOCK FOR MICROMETER-GAGES.

No. 928,889. Specification of Letters Patent. Patented July 20, 1909.

Application filed January 18, 1909. Serial No. 472,963.

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.

This invention relates to the class of spindle locking devices in which the bearing or tool-head surrounding the rotary spindle has a deep transverse slot to receive, edgewise, a lock-actuating ring and an inclosed spindle clamp having, in a flat-bottomed peripheral recess of decreasing depth, a minute locking roller, movable by partial rotation of the actuating ring to lock and to unlock the spindle.

The main objects of the invention are to hold the locking roll in constant contact with the actuating ring and thus to insure immediate action of the locking device; and also, by simplified means, to firmly secure the annular clamp in working position in the tool head.

One present improvement consists in a thin, flat, tempered spring secured endwise in a wall of the annular clamp, and lying along the convex floor of its peripheral recess. The spring thus arranged lifts the locking roller always into contact with the inner wall of the actuating ring, and it obviates the necessity of hardening the locking clamp, to prevent its becoming indented by the roll.

A further improvement consists in holding the clamping ring from turning, by introducing, through a threaded perforation in the tool-head or bushing, a screw, the pointed tip of which enters a notch or groove in the edge wall of the clamp.

In the drawing, Figure 1 is a side view of a micrometer gage embodying my invention. Fig. 2 is a transverse section, four times enlarged, taken through the tool-head on line 2—2 of Fig. 1, and Fig. 3 an axial section thereof on same scale, on line 3—3 of Fig. 2, the spindle and holding screw in elevation. Fig. 4 is a side view of the clamping ring, similarly enlarged, and Fig. 5 a plan of the spring.

The tool to which my improvement is applied will be of any usual construction, with a bearing or tool-head 7, in which the spindle 8 is rotatable. The tool-head has a deep transverse slot 9 formed in it to receive, edgewise, when the spindle is withdrawn, the lock actuating ring 10 and the severed annular clamp 11 within it, together with the spring and roller located between them.

The distinctive characteristics of the clamp construction will be explained in detail with reference to the enlarged drawings.

Clamping ring 11 is transversely severed at 12 and formed with a cam-like peripheral recess 13 the floor of which is convex to form a bed for the thin, flat spring 14 which is pinched at one end between the walls of a slot 15, Fig. 4. The free portion of the spring is held down on a curve eccentric to the ring 10, by the roller 16 in the deepest part of recess 13. The roller is thus lifted and kept elastically in contact with the actuating ring at all times, and the slightest rotation of the ring, in the proper direction, carries the roller forward toward the shallower part of the recess, presses the spring inwardly and compresses the adjacent free arm of the clamp upon the spindle, locking it instantly. The reverse movement as speedily releases it, see Fig. 2.

In order to secure the clamping ring against any rotary movement I form in its side or edge a notch or groove 18, Figs. 2, 3 and 4, in position to receive the tip portion of a screw 17, threaded into and flush with the end portion of the bushing or tool head 7, see Fig. 3. This device materially simplifies the holding means heretofore adopted, and makes a much nicer finished tool than has hitherto been produced. The groove 18 permits the recessed part of the clamp to yield more readily to lock upon the spindle. The flat spring 14 would extend normally in the general direction of slot 15 in which its end is secured, but is deflected into the recess 13 in assembling the parts and held by the roller 16 and ring 10. Hence the curvature shown for the bottom of said recess is not essential.

What is herein claimed is:

1. In a spindle locking device, the bearing or tool-head formed with a deep transverse slot and the rotatable spindle located axially in such head, in combination with an annular clamp having a peripheral recess of decreasing depth, a flattened spring and a locking piece in such recess and an actuating ring rotatable about said clamp.

2. The bearing or tool-head formed with a deep transverse slot and the rotatable spindle located axially in such head, in combination with a severed clamping ring having a cam-like peripheral recess, a flattened spring held by one end therein and a roller pressing inwardly the free end of the spring, and with a rotatable actuating ring inclosing said locking parts.

3. The bearing or tool-head formed with a deep transverse slot, the rotatable spindle located axially in such head, and the lock actuating ring rotatable in said slot, in combination with an annular clamp having a marginal groove, a peripheral recess of decreasing depth, a locking roller in such recess, and with a holding screw in the tool-head formed with a reduced tip engaging the groove in said clamp.

4. In micrometer spindle locks, the transversely grooved and severed clamping ring formed with a peripheral recess of decreasing depth, a movable locking piece therein and an actuating ring therefor surrounding the spindle and said clamp, in combination with a holding screw in the tool-head engaging at tip with said clamp.

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

LAROY S. STARRETT.

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