

No. 726,003.

PATENTED APR. 21, 1903.

L. S. STARRETT.  
INSIDE MICROMETER.  
APPLICATION FILED JAN. 17, 1902.

NO MODEL.

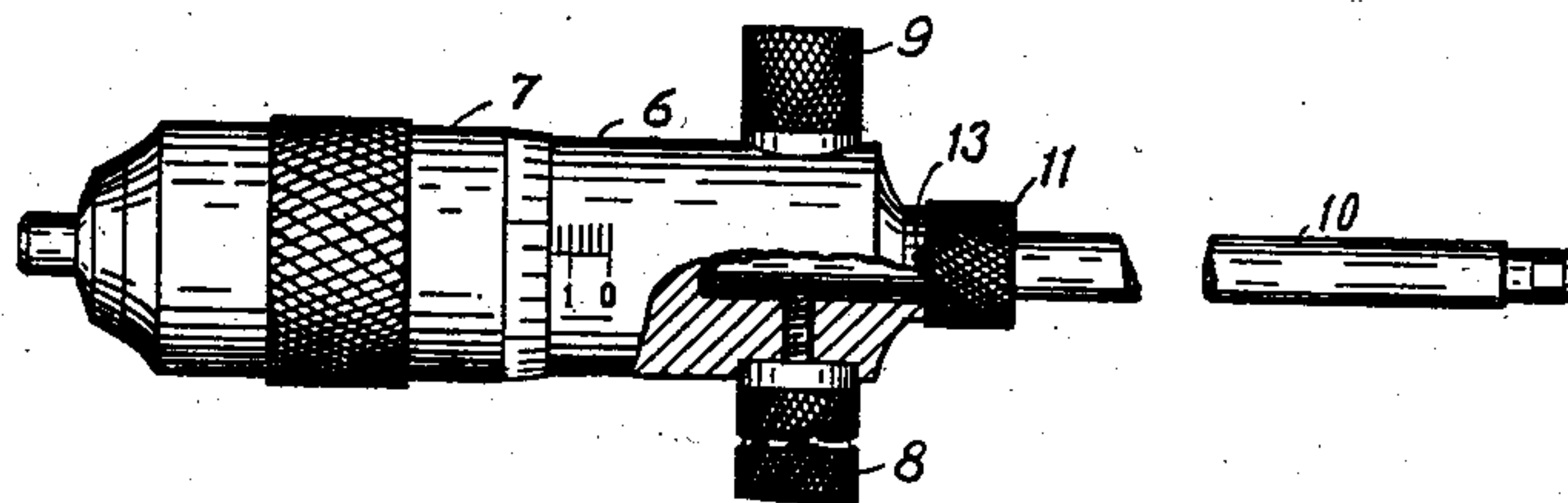


FIG. 1.

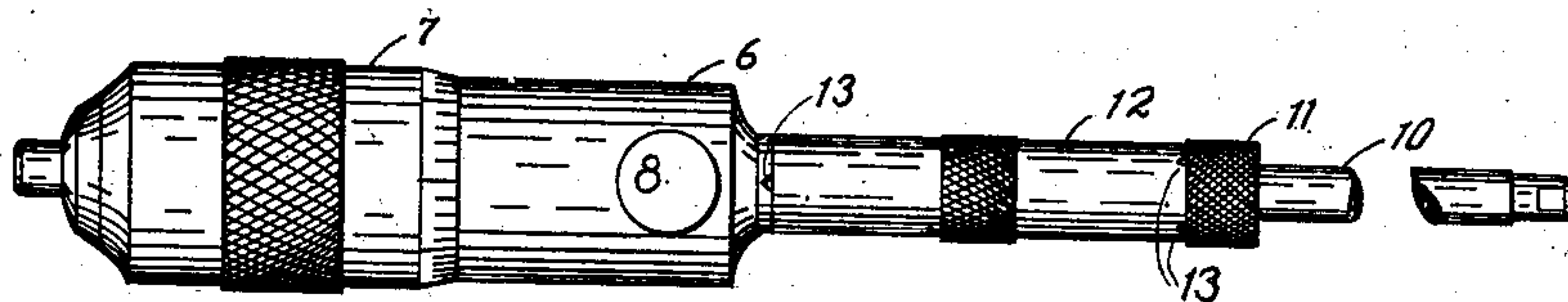


FIG. 2.

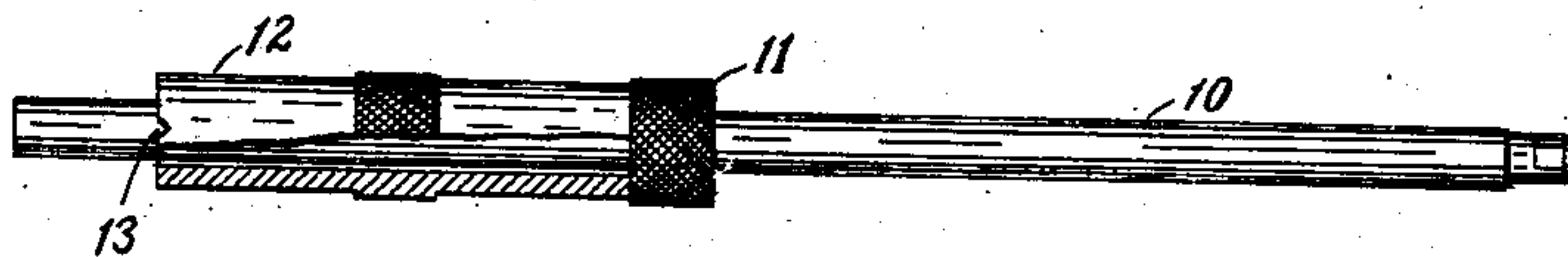


FIG. 3.

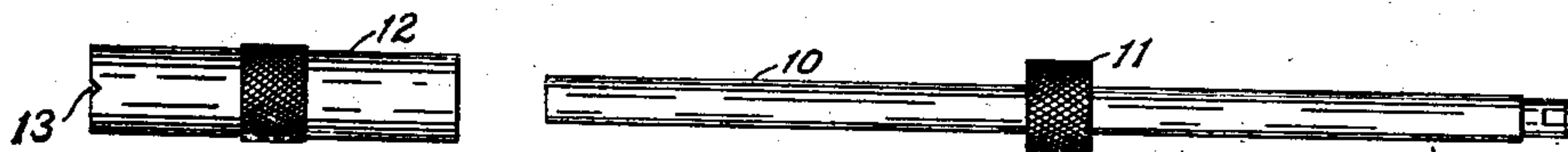


FIG. 4.

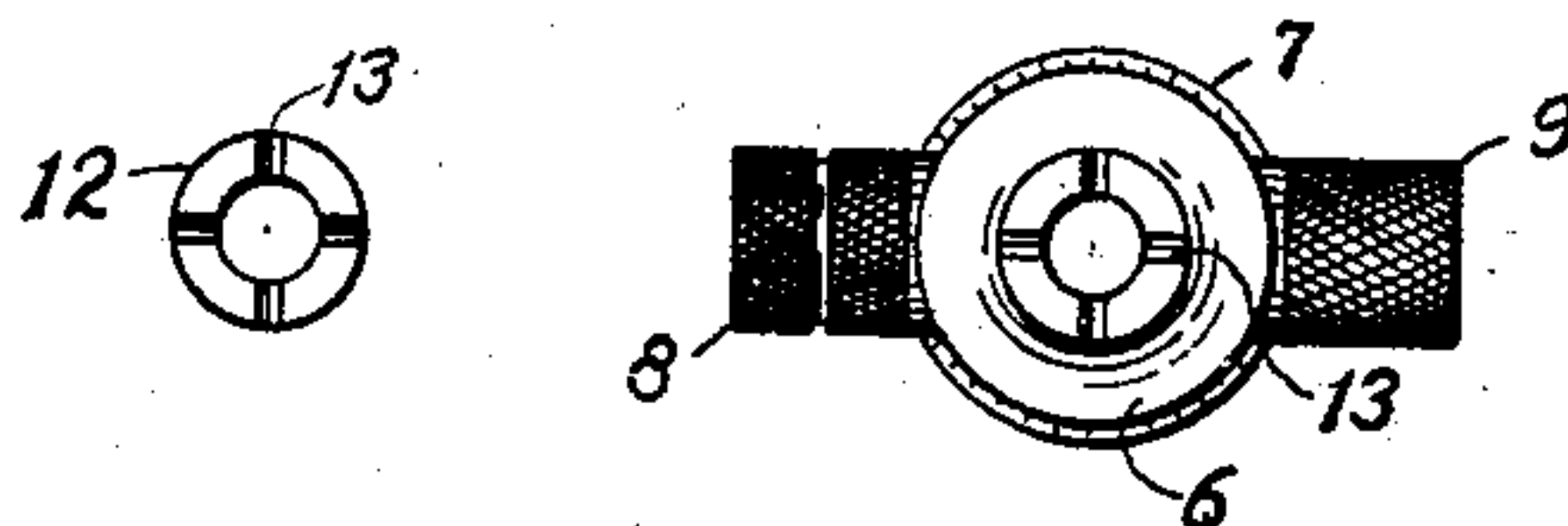


FIG. 5.

WITNESSES

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# UNITED STATES PATENT OFFICE.

LAROY S. STARRETT, OF ATHOL, MASSACHUSETTS.

## INSIDE MICROMETER.

SPECIFICATION forming part of Letters Patent No. 726,003, dated April 21, 1903.

Application filed January 17, 1902. Serial No. 90,162. (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 Inside Micrometers, of which the following is a specification.

The object of this invention is to provide for more accurate and speedy setting of the adjustable measuring-rods of inside micrometers and to lessen the number of such rods required by increasing the adjustability of the limited number employed under my improvement. These objects I accomplish by forming or fixing upon each of said rods at a point intermediate between their ends a rigid radial collar of greater diameter than the rod to form a positive stop for setting it in the micrometer-head more accurately and quickly than to a line, as is usually practiced, and by providing loose extension-sleeves on and cooperating with such collared rods.

The essential feature of my improvement is a plurality of short accurate extension-sleeves of precise lengths—say half-inch, one inch, one and one-half inches, or two inches—fitting easily on said rod between its secured end and said collar, thereby limiting the extent to which said end may enter or telescope into the micrometer-head and proportionately projecting or extending the other end. These precision-sleeves thus applied so change the length or adjustability of the rods that a less number of rods are required than heretofore to get the various measurements needed. One end of each sleeve and the abutting end of the micrometer-head are scored or grooved radially from their axis, so as by a slight rotation to remove any adhering matter liable to cause inaccuracy. When set in proper position, the measuring-rod is held fast by a rod-clamp screw.

In the drawings, Figure 1 is a plan or side view, partly in section, of an inside micrometer provided with my collared measuring-rod. Fig. 2 is a view of one of my improved tools, showing the adjustable rod in position with the precision-sleeve slipped on the rod to protrude it. Fig. 3 shows the rod and sleeve removed from the head, and Fig. 4 represents said parts detached. Fig. 5 is an end view of the head and sleeve.

6 represents the hollow body of the micrometer, and 7 the rotatable barrel, having

a suitable threaded connection, both graduated as usual and forming together what is called the "head" of the tool.

8 is a rod-clamp screw, the threaded stem of which passes transversely through the wall of body 6 and bears at tip against the side of the measuring-rod to secure it when adjusted. A transverse arm 9, corresponding to the projecting head of clamp-screw 8, gives symmetry to the tool and aids to hold the body 6 while rotating the sleeve 7.

The measuring-rod 10 is formed or provided with a radial collar 11, fixed in position at a point intermediate between its ends and serving as a positive stop, bearing against the tip of the body 6, as in Fig. 1, so as to instantly and correctly locate the rod when inserted in said body.

12 represents a loose sleeve of one inch or one-half inch length, fitting on the rod 10 between its collar 11 and the tip of the tool-body 6, as in Fig. 2, having thus the effect to protrude the free end of said rod to a farther distance equal to the length of either or both of such sleeves. The tip of body 6 and one end of each sleeve 12 will be scored or grooved radially, as best shown at 13, Fig. 5, so that by rotation of the sleeve any foreign matter between the parts may be removed and not prevent accurate measurements.

I claim as my invention—

1. In an inside micrometer, the hollow, graduated body 6, and the rotatable body 7 graduated terminally, in combination with a measuring-rod having a fixed radial collar between its ends, and with a precision-sleeve 12 fitting loosely on said rod between such collar and the tip of said body, as set forth.

2. In an inside micrometer the body 6 and barrel 7 forming the adjustable head of the tool, in combination with a measuring-rod having an intermediate radial collar forming a positive stop, limiting the entrance of the rod end into the barrel and with a precision-sleeve fitting on said rod and grooved terminally to remove any adhering substance, substantially as set forth.

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

LAROY S. STARRETT.

Witnesses:

FRANK A. BALL,  
FRANK E. WING.