No. 824,420. PATENTED JUNE 26, 1906.

C. A. FISK.

MICROMETER GAGE.

APPLICATION FILED MAY 25, 1904.

Fig. 1.

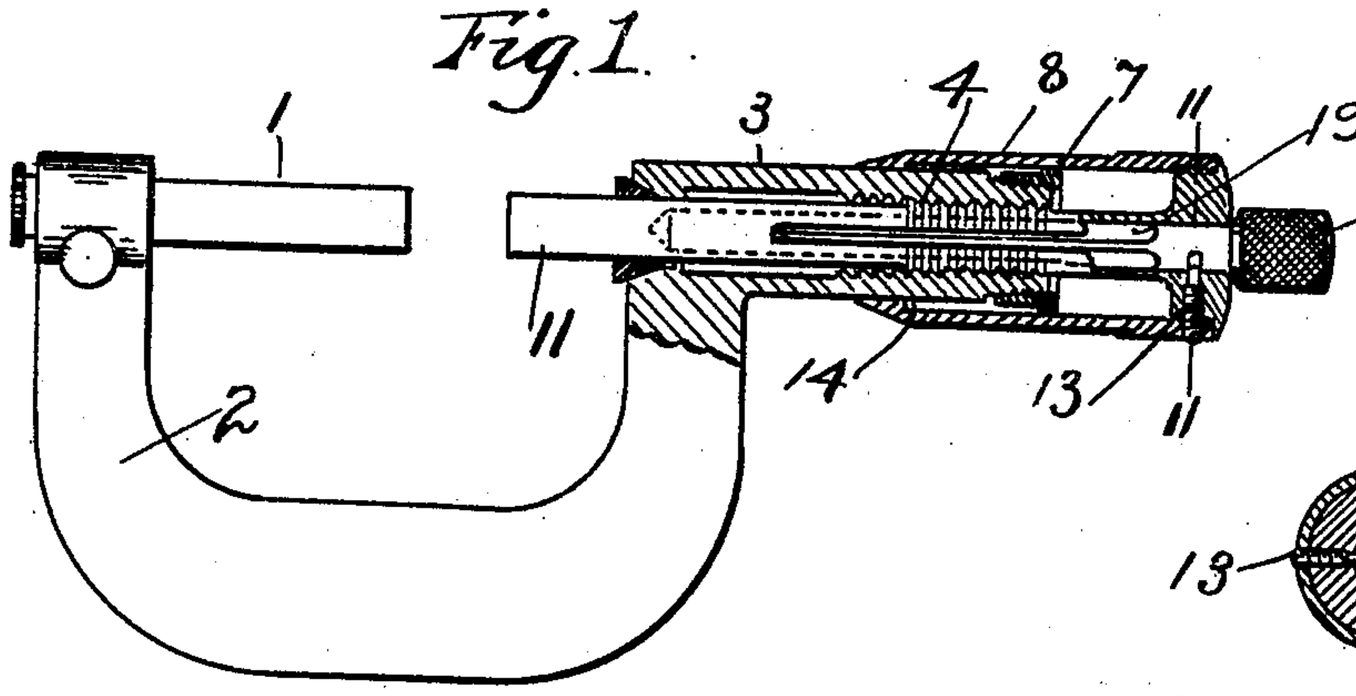

Fig. II.

Fig. 3.

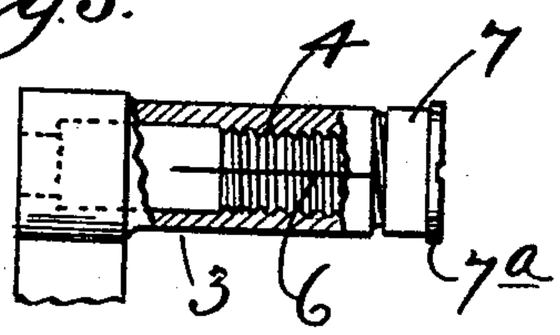

Fig. 2.

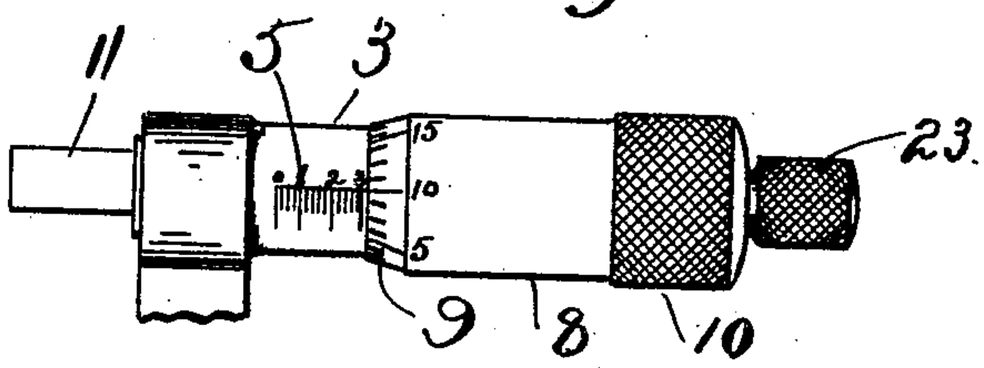

Fig. 8.

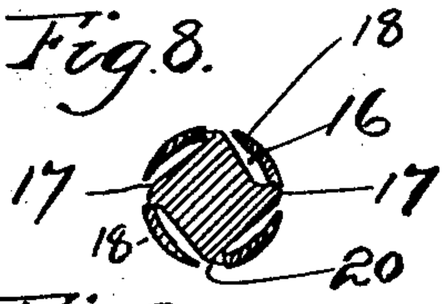

Fig. 9.

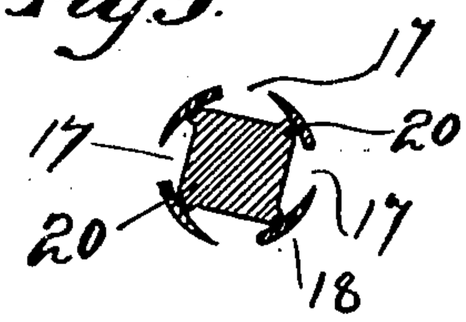

Fig. 10.

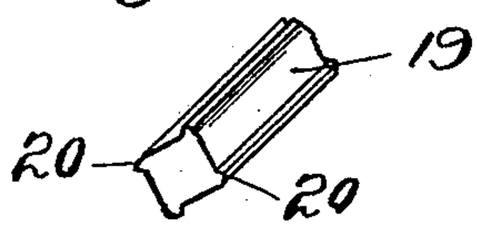

Fig. 4.

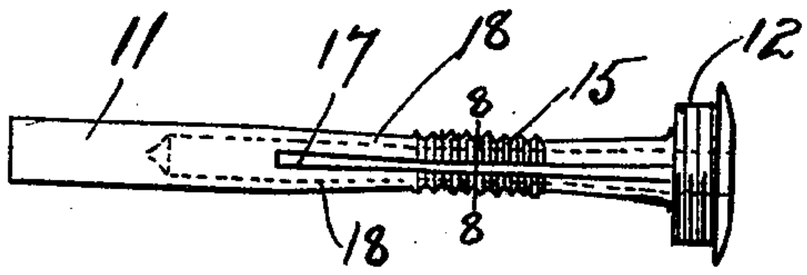

Fig. 5.

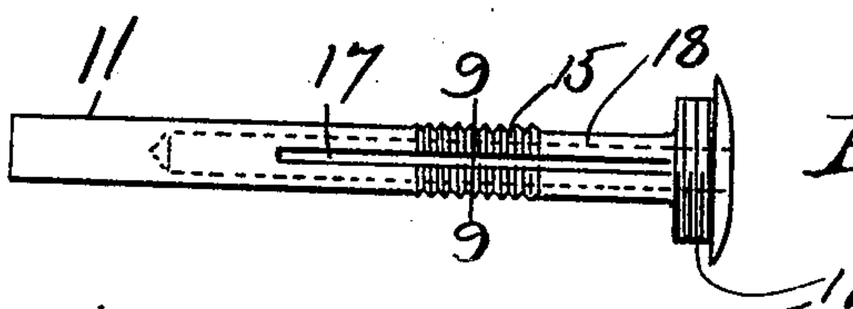

Fig 6.

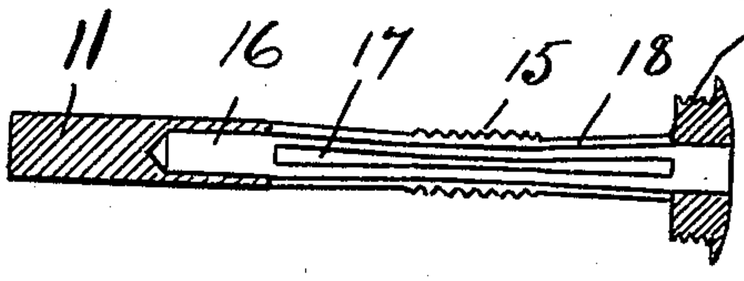

Fig. 7.

Witnesses

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MICROMETER-GAGE.

No. 824,420. Specification of Letters Patent. Patented June 26, 1906.

Application filed May 25, 1904. Serial No. 209,607.

To all whom it may concern:

Be it known that I, CARL A. FISK, a resident of the city of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Micrometer-Gages; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to measuring-gages of the class that are adjustable by a finely-graduated screw and adapted to measure dimensions with great accuracy.

The threaded spindle has heretofore been made adjustable in respect to its distance from a fixed head by rotation only, and owing to the fine thread required by the nicety of the instrument the longitudinal movement of the spindle is necessarily very slow.

The object of this invention is to provide a quick and easy adjustment whereby the spindle may be instantly moved longitudinally through the barrel over the whole or any portion of its measuring distance.

This invention consists of other novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the appended claims.

A practical embodiment of the invention is represented in the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the views.

Figure 1 is a side elevation of my device, showing the fixed barrel, rotatable sleeve, and a portion of the expansible spindle in section. Fig. 2 shows the barrel and sleeve in elevation. Fig. 3 shows the fixed barrel partly in section. Fig. 4 shows the spindle in elevation with the screw portion which is formed on the spring-ribs as being in a contracted position. Fig. 5 shows the same in the expanded position or the position in which the thread on this spindle engages the internal thread in the barrel. Fig. 6 shows the spindle in section and with the threaded portion in the contracted position. Fig. 7 shows the cam-bar in elevation. Fig. 8 is an enlarged sectional end view taken on line 8 8 of Fig. 4, showing the position taken by the cam-bar within the spindle when the screw portion of said spindle is contracted. Fig. 9 is an enlarged end view showing a section on line 9 9 of Fig. 5, illustrating the position of the cam-bar within the spindle when it is turned in position to expand the threaded portion on said spindle. Fig. 10 is an enlarged perspective view showing a portion of the end of the cam-bar. Fig. 11 is a section on line 11 11 of Fig. 1, showing the recess in the cam-bar for the reception of the end of the screw, which screw limits the motion of said cam-bar to one-quarter of a turn in the spindle.

In the drawings at 1 is represented the anvil or head of the instrument, which is held to be adjusted longitudinally in the end of the curved neck 2. At the opposite end of this curved neck and in line with the said head is the stationary tubular body or barrel 3, which is formed integral with said neck. This barrel is threaded internally at 4 and graduated externally at 5 in minute fractions of an inch. The barrel is split at 6 longitudinally and is provided with a nut 7, which is screwed onto its tapering end, by which nut the internal-threaded portion 4 is contracted to compensate for wear.

Outside of the fixed barrel 3 is the rotating sleeve 8, beveled at its inner end and graduated peripherally at 9 in the usual way. The outer end of this sleeve 8 has a knurled head 10 and is connected to rotary spindle 11 by the threaded head 12 and secured by the set-screw 13, so that said spindle and sleeve will revolve together, the spindle passing through and turning within the barrel 3 and the sleeve 8 revolving outside thereof.

To prevent the sleeve and spindle from being unscrewed and withdrawn from the barrel, a head 7^a is formed on the nut 7, which engages the shoulder 14 on the interior of said sleeve, making it necessary to remove this nut before the mechanism can be taken apart.

The spindle 11 is preferably made of steel turned to the desired shape and size, the thread 15 being cut on its body portion and the center of the spindle drilled out at 16 (see Fig. 6) for the reception of the cam-bar. Any desired number of slots 17 may be cut through the periphery of the spindle, forming a plurality of longitudinal ribs or bars 18, which

bars are bent or set together, as illustrated in Figs. 4 and 6, in order to reduce the diameter of the threaded portion 15. These ribs while contracted are hardened to a spring-temper, making it necessary to force them out in order to bring the said threaded portion 15 out to its original position. (Shown in Fig. 5.)

At 19 is the cam-bar, (best shown in Figs. 7 and 10,) which is made with a plurality of longitudinal ribs 20, corresponding in number to the slots 17 in the spindle. This bar is inserted into the hollow center portion 16 of the spindle, and when the threaded portion of the spindle is contracted each rib 20 engages a slot 17, as illustrated in Fig. 8. In order to expand these ribs, the cam-bar is turned one-quarter of a revolution into the position shown in Fig. 9, the entering edges of each rib being beveled off on its under side to facilitate the turning of the bar within the spindle to open up the said spring-ribs. The recess 21 in the neck of the cam-bar (best shown in Fig. 11) is for the purpose of receiving the end of the screw 13 and limit the rotation of said bar in relation to said spindle to one-quarter turn.

It has been found in the practical use of the ordinary micrometer gage or caliper that considerable time is lost in adjusting the spindle to measure the work, owing to the extreme fineness of thread of the adjusting-screw. I have therefore produced an extremely simple, practical, and reliable device for overcoming this difficulty. The mechanism consists, mainly, of an expansible screw formed on spring-ribs, which ribs are made integral with the spindle, said ribs being actuated to expand by a rotatable cam-bar. When it is desired to move the spindle any considerable distance, the handle 23 on the cam-bar that projects out beyond the sleeve 8 is turned backward, allowing the expansible screw portion to contract and disengage the threaded portion on the interior of the barrel, allowing the spindle and sleeve to be moved through the barrel to any desired position, when the screw may be expanded and connected to the threaded portion again by simply turning the head of the cam-bar forward to its original position.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A micrometer-gage comprising a fixed internally-threaded barrel, a spindle working in said barrel and having its body provided with an external-threaded portion, said threaded portion being normally contracted to hold the same out of engagement with the threads of said barrel, and means for expanding said contracted portion, whereby the threads thereof will engage the threads of said barrel.

2. A micrometer-gage comprising a fixed tubular barrel provided with an internal thread, a spindle working in said barrel and provided with an integral, normally contracted portion also provided with a thread, and means within said spindle for expanding said contracted portion, whereby the threads of the spindle are caused to engage the threads of the barrel.

3. A micrometer-gage comprising a fixed tubular barrel provided with an internal thread, a spindle working therein and having longitudinal normally contracted ribs integral therewith, said ribs being exteriorly threaded, and means for expanding said ribs, whereby the threads thereof are caused to engage the threads of the barrel.

4. In a device of the character described, a spindle having longitudinal spring-ribs, a screw-thread made on said ribs and a rotatable cam held within said spindle for expanding said ribs.

5. In a device of the character described, a spindle having a hollow center portion, slots through said spindle forming longitudinal ribs thereon, a screw-thread made on said ribs, a rotatable cam-bar supported in said hollow center for expanding said ribs.

6. In a device of the character described, an internally-threaded barrel, a spindle having longitudinal spring-ribs, a screw-thread made on said ribs and a rotatable cam-bar held within said spindle for expanding said ribs so that the screw-thread thereon will engage the internal-threaded barrel.

7. In a device of the character described, an internally-threaded barrel, a spindle having a hollow center portion, slots through said spindle forming longitudinal ribs thereon, a screw-thread made on said ribs, a rotatable cam-bar supported in said hollow center for expanding said ribs, causing the screw-thread thereon to engage the internally-threaded portion of the barrel and means for limiting the rotation of said cam-bar in relation to said spindle.

8. A micrometer-gage comprising a fixed internally-threaded barrel, a spindle working in said barrel and having its body provided with an external-threaded portion, said threaded portion being normally contracted to hold the same out of engagement with the threads of said barrel, means for expanding said contracted portion, whereby the threads thereof will engage the threads of said barrel, and means for taking up the wear upon said threads.

In testimony whereof I have hereunto set my hand this 21st day of May, A. D. 1904.

CARL A. FISK.

In presence of—

HOWARD E. BARLOW,

E. I. OGDEN.