May 11, 1948. W. A. GRIBBLE 2,441,317

MICROMETER HAVING A NONROTATABLE SPINDLE

Filed Dec. 2, 1944

Fig. 1.

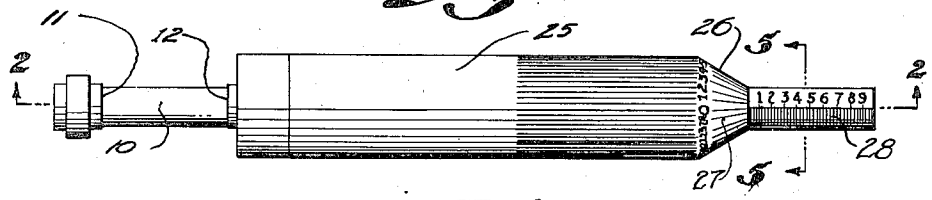
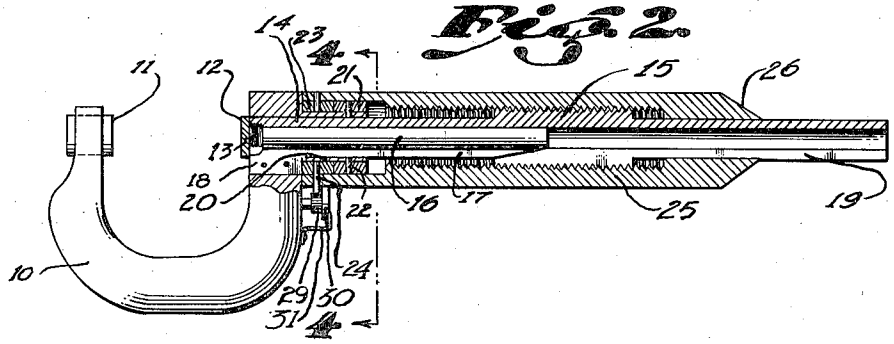


Fig. 2.



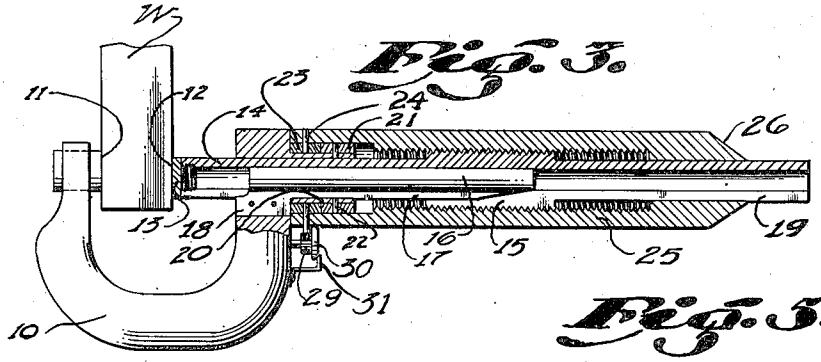


Fig. 3.

Fig. 5.

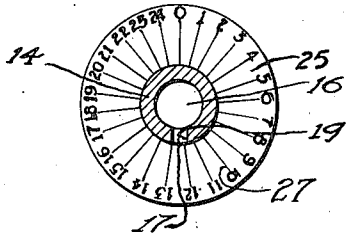
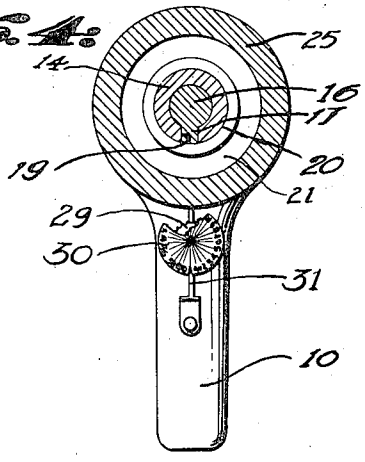


Fig. 4.



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MICROMETER HAVING A NONROTATABLE SPINDLE

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6 Claims. (Cl. 33—164)

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This invention relates to improvements in micrometers.

A primary object of the invention is to provide an improved micrometer consisting of a frame and a threaded member mounted on one arm for sliding movement toward and away from the other arm of the frame, and a thimble rotatably mounted on the frame and threadedly engaging the threaded member so that as the threaded member is advanced toward the work on rotation of the thimble it will merely slide without rotation. In the construction of the conventional micrometer there is a frame, a spindle, and a thimble, the thimble being threadedly mounted on the frame and on rotation it advances the spindle toward the opposite arm of the frame with a screwing action involving rotary movement. If the micrometer is used to measure thicknesses of relatively soft materials, such as for example plastics, the screwing action of the spindle tends to dig into the material whose thickness is to be measured, thus giving an erroneous reading. By means of the improved micrometer wherein the threaded member which corresponds to the conventional spindle is held against rotation and is merely caused to slide relative to the frame on rotation of the thimble this digging action is avoided thus enabling accurate measurements to be obtained in measuring relatively soft materials.

Another object of the invention is to provide an improved micrometer having the above-mentioned characteristics which is of relatively simple and highly durable construction and which has relatively few parts which can be easily assembled together.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawings for an illustrative embodiment of the invention, wherein:

Figure 1 is a front view in elevation of the micrometer embodying the present invention;

Fig. 2 is a view in side elevation of the same, parts being broken away and illustrated in vertical section, the position of the parts being shown in fully open position;

Fig. 3 is a view similar to Fig. 2, but illustrating the micrometer in a position wherein the thickness of a piece of work is being measured;

Fig. 4 is a section view taken substantially upon the line 4—4 upon Fig. 2; and

Fig. 5 is a sectional view taken substantially upon the line 5—5 upon Fig. 1.

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Referring to the accompanying drawings wherein similar reference characters designate similar parts throughout, the improved micrometer comprises a C-shaped frame 10 on one arm of which there is a stationary face 11 and on the other arm of which there is a movable face 12. The thickness of a piece of work W is determined by measuring the distance between the stationary and movable faces. The movable face 12 may be provided by a plug 13 screwed into the end of a tubular threaded member 14 having threads 15 intermediate the ends thereof. These threads are preferably forty threads per inch although the pitch of the threads may be varied. Within the tubular member there is disposed a cylindrical stem 16 having a feather 17 formed on one side thereof and extending throughout a substantial portion of its length. This feather may be widened as at 18 near the frame and is pinned or otherwise rigidly secured to the frame. The stem 16 is designed to fit the interior of the tubular member and the feather 17 is slidably disposed in a slot 19 which extends longitudinally of the tubular member 14 its entire length. A tubular hub or sleeve portion 20 is formed integral with the frame and fits snugly about the tubular member 14. A ring 21 is disposed about this hub portion and is pinned thereto as by pins 22. This ring is positioned against another ring 23 which also fits about the hub and which has pinned thereto as by pins 24 a thimble 25. This thimble is internally threaded with threads which mesh with the threaded portion of the tubular member 14. Ring 21 which is pinned to the hub serves to retain ring 23 in place permitting it and the thimble 25 to rotate relatively to the frame but to be held against longitudinal movement relatively thereto. It will be appreciated that on retention of the thimble 25 relatively to the frame that the threaded member 14 will be caused to screw out or in through the thimble and thus to be advanced or retracted with relation to the work W.

The end of the thimble is preferably tapered as indicated at 26 and fits snugly around the outer end of the threaded member 14 which projects or extends therethrough. The tapered portion is graduated as indicated at 27 and the projecting portion of the threaded member is provided with a witness mark along which graduations 28 may be arranged. With the threads on the threaded member and thimble of a pitch of forty threads per inch, each complete revolution of the thimble will bring about a movement of the movable face 12 of .025" and if the gradu-

ations 27 divide the circumference of the thimble into twenty-five equal parts the movement of the movable face 12 may be read directly thereon in thousandths. The number of revolutions of the thimble can be determined by reading the graduations 28 exposed on the projecting end of the threaded member, or if desired, one of the pins 24 may be extended so as to engage with the teeth of a rotary toothed member 29 mounted on the frame 10 which carries a disc 30 on which graduations are formed and which are arranged to traverse a pointer 31. On each revolution of the thimble 25, the extended pin 24 will advance the toothed member 29 one turn and this, in turn, advances the disc beneath the pointer 31 so that the number of revolutions can be read directly against the pointer.

From the above-described construction it will be appreciated that the improved micrometer is of relatively simple and durable construction and that in its use the movable face 12 is advanced toward the work W without rotary or screwing action. Consequently, it will not tend to dig into the work in the course of taking a measurement, but will be merely pressed thereagainst so as to give an accurate indication of its thickness even though the work W is of relatively soft material.

Various changes may be made in the details of construction without departing from the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A micrometer comprising a frame, a stem having a feather rigidly mounted on one arm of the frame, a slotted threaded member fitting about the stem and feather thereon, a thimble threadedly engaging the threaded member, and means providing a rotatable connection between the thimble and the frame whereby upon rotation of the thimble the threaded member may be caused to slide without rotation relatively to the frame.

2. A micrometer comprising a frame, a stem having a feather rigidly mounted on one arm of the frame, a slotted threaded member fitting about the stem and feather thereon, a thimble threadedly engaging the threaded member, a hub on the frame, a ring pinned to the thimble rotatably disposed about the hub, and a second ring pinned to the hub for maintaining the first mentioned ring against sliding movement relatively to the hub whereby upon rotation of the thimble the threaded member may be advanced or retracted relatively to the frame without rotation.

3. A micrometer comprising a frame, a stem having a feather rigidly mounted on one arm of the frame, a slotted threaded member fitting about the stem and feather thereon, a thimble threadedly engaging the threaded member, a hub on the frame, a ring pinned to the thimble rotatably disposed about the hub, and a second ring pinned to the hub for maintaining the first mentioned ring against sliding movement relatively to the hub whereby upon rotation of the thimble the threaded member may be advanced or retracted relatively to the frame without rotation, the threaded member extending through the thimble and having a witness mark and graduations thereon and the thimble having graduations thereon.

4. A micrometer comprising a frame, a stem having a feather rigidly mounted on one arm of the frame, a slotted threaded member fitting about the stem and feather thereon, a thimble threadedly engaging the threaded member, means providing a rotatable connection between the thimble and the frame whereby upon rotation of the thimble the threaded member may be caused to slide without rotation relatively to the frame, a toothed member mounted for rotation on the frame, and means on the thimble for rotating the toothed member one turn for each revolution of the thimble, and means for reading the number of rotations of the thimble on the toothed member.

5. A micrometer comprising a frame, a threaded member having a slidable but non-rotatable connection with one side of the frame, a thimble threadedly engaging the threaded member, said frame having a hub disposed about a portion of the threaded member presenting an external shoulder thereon, and a ring disposed about the hub between the shoulder and the frame and rigidly secured to the interior of the thimble whereby upon rotation of the thimble the threaded member may be advanced or retracted through the frame without rotating relatively thereto.

6. A micrometer comprising a C-shaped frame having a hub on the exterior of one arm thereof, a threaded member extending through said hub having a slidable but non-rotatable connection with the frame, a ring secured to the exterior of the hub, a thimble threadedly engaging the threaded member, said thimble having a ring secured thereto rotatable about the hub against said ring on the hub whereby on rotation of the thimble the threaded member may be advanced or retracted through the hub without rotating relatively thereto.

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REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
1,295,936	Spellman	Mar. 4, 1919
2,338,001	LaVigne	Dec. 28, 1943