Jan. 12, 1954 C. ZELNICK 2,665,490

MICROMETER GAUGE

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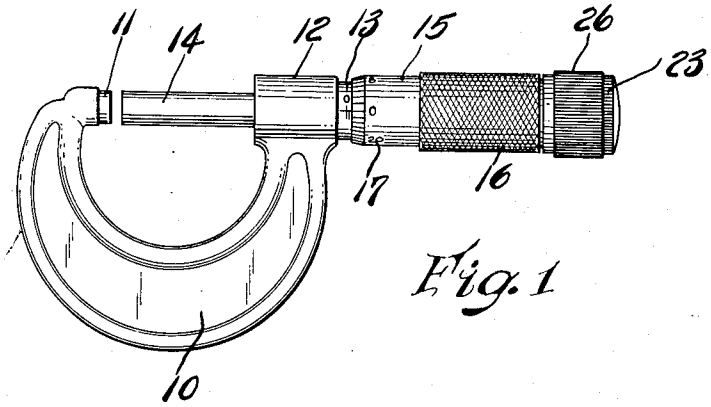


Fig. 1

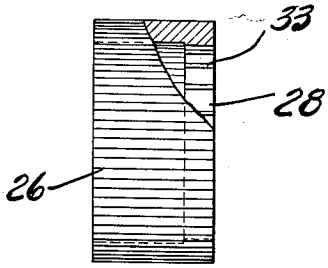


Fig. 3

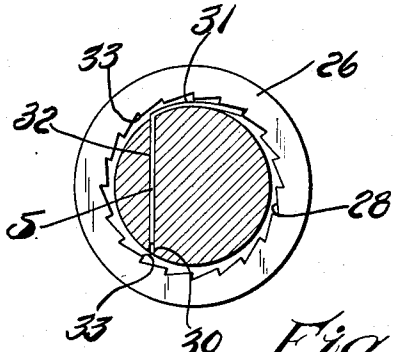


Fig. 4

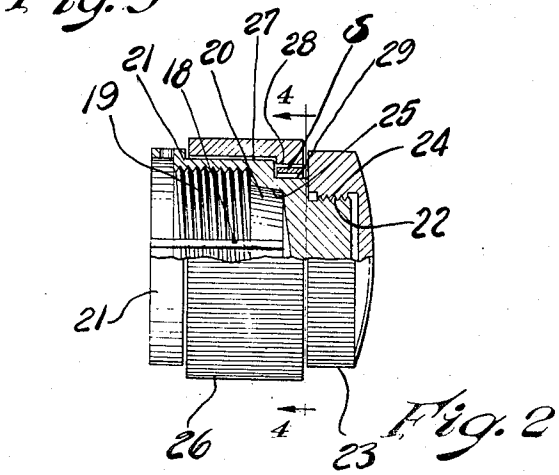


Fig. 2

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MICROMETER GAUGE

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3 Claims. (Cl. 33—164)

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This invention relates to micrometer gauges and more particularly to new and improved automatic stop means which is in practice actuated to feed the spindle of the micrometer gauge against the "work" and which stops rotation of the spindle when a predetermined measuring pressure is attained.

One of the prime objects of the invention is to provide means associated with the spindle of a micrometer gauge which can be actuated to feed the spindle, and which will stop rotation of said spindle when it contacts the anvil, or the work being measured with a predetermined pressure, thus conserving the micrometer measuring surfaces, and the wear and distortion incident thereto.

A further object of the invention is to provide means of the type described which indicates by audible clicks and by interrupted motion, which can be felt, when it is no longer actuating the spindle.

Another object of the invention is to design a simple, compact and economical means for actuating the spindle of a micrometer, which prevents rotation and inward travel of the spindle and locks it in a predetermined, set position, thus insuring highly accurate readings and providing a gauge which remains in adjusted position.

A further object of the invention is to provide a simple and durable mechanism of the type described, which is compact in size, and which reduces the overall length of the micrometer so that it readily fits the hand of the user.

Another object of the invention is to provide a micrometer mechanism which is accurately balanced, simply and economically manufactured, and which can be readily assembled and disassembled for adjustment, repair or the replacement of parts when necessary.

A still further object of the invention is to design an automatic stop means of the type described wherein the spring pawl and serrated collar is firmly anchored and cannot be pulled from its seat in the end wall of the micrometer clamping member to render the stop mechanism inoperative.

With the above and other objects in view, the present invention consists in the combination and arrangement of parts, hereinafter more fully described, illustrated in the accompanying drawing, and more particularly pointed out in the appended claims, it being understood that changes may be made in the form, size, proportion, and minor details of construction, without

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departing from the spirit or sacrificing any of the advantages of the invention.

In the drawing:

Fig. 1 is a side elevational view of a micrometer showing my improved actuating collar thereon.

Fig. 2 is a part sectional, side elevational view of the clamping member and actuating collar mounted on the end of the micrometer sleeve.

Fig. 3 is a part sectional, side elevational view of the actuating collar only.

Fig. 4 is a transverse sectional view taken on the line 4—4 of Fig. 2.

Refer now more particularly to the accompanying drawing wherein I have shown a micrometer of the general design illustrated and described in Patent No. 2,212,910 with my improved mechanism incorporated therein. The micrometer includes a frame 10 provided with an anvil 11, and a tubular barrel 12 inscribed with a longitudinal scale 13 projects from the frame 10 and is interiorly threaded at its outer end to receive the threaded outer end of a spindle 14 as usual.

A tubular sleeve 15 is telescoped over the inscribed barrel 12, the outer end of the sleeve 15 being internally threaded to receive the threaded end of the spindle 14, which projects beyond the barrel 12. The outer end portion of the sleeve 15 is knurled as at 16, and the opposite end is beveled and bears a circumferential scale 17 which cooperates with the longitudinal scale 13 in the conventional manner.

Formed on the extreme end of the sleeve 15 is a sectored or split portion 18 of reduced diameter, including a threaded portion 19, and a tapered nose portion 20. A clamping member 21 includes a reduced outer threaded end 22 and a knurled cap 23 is mounted thereon and is interiorly threaded as at 24 and bored with a cooperating taper as at 25 to accommodate the nose portion 20 and clamp the split outer end of the sleeve 15 on the projecting threaded end of the spindle 14.

In this manner, the rotating sleeve 15 and clamping member 21 are clamped to the gauging spindle 14 and when actuated, serve to feed the spindle 14 into engagement with the work in the usual manner.

This particular structure is more specifically illustrated and described in previously mentioned Patent No. 2,212,910, and I do not deem it necessary to describe it at greater length. The structure dealt with to this point is common to present-day micrometers, and it is the improvement hereinafter described to which this present application is directed.

The instant improvement includes a knurled collar 26 seated on a shouldered portion 27 provided by reducing the diameter of the clamping member 21, the collar 26 being formed with an inwardly disposed, serrated, flanged portion 28 which is disposed in a further shouldered portion 29 provided by further reducing the diameter of the clamping member 21. The cap end 23 serves, of course, to prevent the collar 26 from slipping off the end of the clamping member 21 and is readily disengageable to allow removal of the collar 26 when desired.

A saw cut 30 is formed in the solid end wall of the clamping member 21, and a spring pawl S is seated therein and terminates in a curved leg 31 which extends into the peripheral channel 32 formed between the end wall and flanged portion 28, said curved leg extending in the direction in which the collar 26 is to be rotated to engage the teeth 33 cut in the flanged portion 28 which oppose and prevent relative rotation of the spindle and collar 26 in the opposite direction.

In practice, the collar 26 is grasped between the thumb and forefinger and rotated or twirled to feed the spindle 14 into engagement with the work to be measured. When a predetermined setting is attained, the knurled collar 26 will rotate relative to the clamping member 21 instead of further feeding the spindle 14 into the work. At this point, the user can both hear the click of the spring leg 31 as it is pulled over the individual teeth 33 and also feel the interrupted motion, and is aware that the spindle is locked in measuring position and that the gauge is ready to be read. The user is thus prevented from inadventently further actuating the spindle 14, and possibly damaging the gauge measuring surfaces and work, and taking an inaccurate reading.

It will thus be seen that I have perfected a very simple and improved automatic stop means for protecting the work and the gauge contact surfaces from undue clamping strains and for locking the gauge at the same setting whenever it is used, thus insuring a greater accuracy of measurement. Further, the spring pawl of the instant device is so anchored that it cannot be pulled loose and thus render the stop mechanism inoperative.

It is obvious that the instant means also assures that the tubular sleeve 15 can be set at the true zero when the spindle is brought into engagement with the anvil to calibrate the gauge as determined by the point at which the knurled collar 26 begins to rotate relative to the clamping member 21.

What I claim is:

1. In a micrometer gauge, the combination with the measuring spindle and the split end sleeve therefor, of an annular clamping member for clamping the split end of the actuating sleeve on the measuring spindle, said clamping member having a grooved end spanning its end wall, a serrated actuating collar disposed on said clamping member overlying said end wall, a spring pawl seated in said groove and having a leg extending peripherally between said collar and said end wall in the direction in which said collar is to be rotated to feed said spindle to the work, the free end of said leg being in engagement with said serrated collar to maintain said collar and clamping member in rotative, frictional engagement in the absence of counteractive, endwise pressure on the spindle opposing the rotation of said spindle sleeve and clamping member.

2. In a micrometer gauge, the combination of the measuring spindle and the split end sleeve therefor, of an annular clamping member for clamping the split end of the actuating sleeve on the micrometer sleeve, said clamping member having a groove spanning its end wall, an actuating collar having an inwardly disposed flange with serrations thereon disposed on said clamping member with the flange overlying said end wall and spaced therefrom, said clamping member having a reduced shouldered portion to receive said actuating collar and a further reduced shouldered portion to receive the flange thereof, a spring pawl mounted in said groove and having a leg extending peripherally between said end wall and said flange in the direction in which said collar is rotated to feed said spindle, said leg being in engagement with said serrations to maintain said actuating collar and clamping member in operative, frictional engagement in the absence of a counteractive, endwise pressure on said spindle opposing the rotation of said spindle, sleeve, and clamping member.

3. The combination as defined in claim 2 in which the extreme outer end of said annular clamping member is reduced and threaded, and a cap end is mounted thereon to prevent said actuating collar from sliding off said clamping member.

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