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W. E. MILLER
MICROMETER STOP COUNTERSINK

2,409,377

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Fig. 1

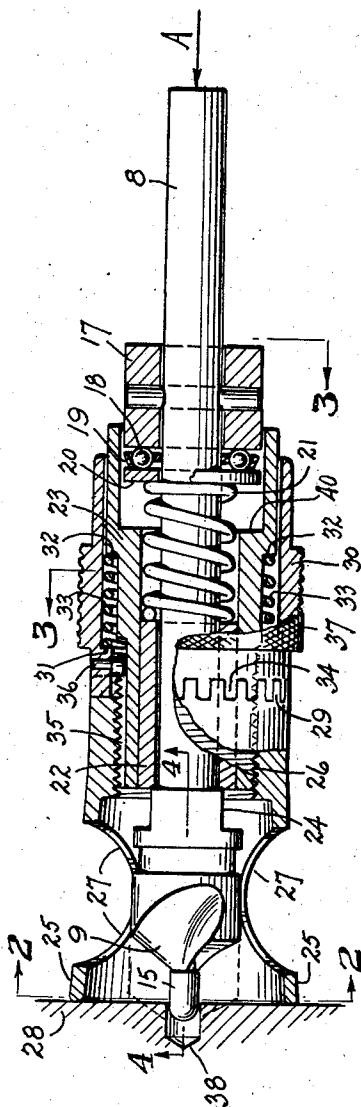


Fig. 4.

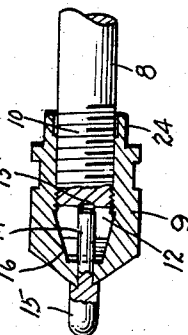


Fig. 3.

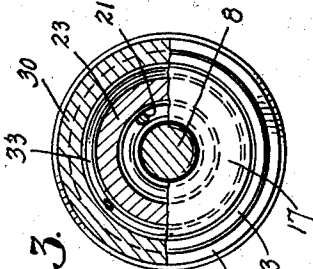


Fig. 2.

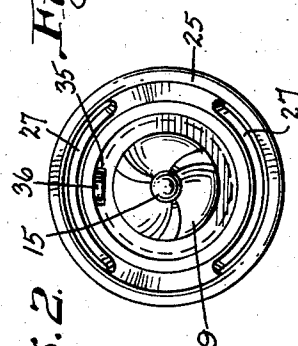


Fig. 7.

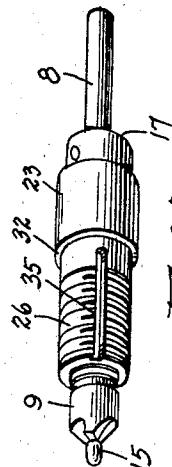


Fig. 6.

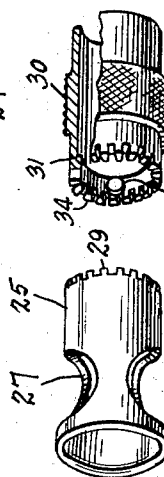
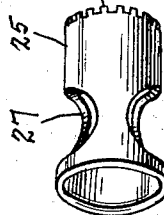


Fig. 5.



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MICROMETER STOP COUNTERSINK

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3 Claims. (Cl. 77-55)

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My invention relates to a micrometer stop countersink designed for accuracy under production conditions.

An important object of the invention is to provide in micrometer means for adjusting a stop countersink: such means that may be adjusted a given amount without resorting to any scale and which may be locked in such adjusted position.

Another object is to provide adjusting means in a stop countersink that may be locked in adjusted positions by interengaging teeth of a given size, so that each tooth will constitute an adjustment of a known amount.

My invention also has for its objects to provide such means that are positive in operation, convenient in use, easily installed in a working position and easily disconnected therefrom, economical of manufacture, relatively simple, and of general superiority and serviceability.

My invention also comprises novel details of construction and novel combinations and arrangements of parts, which will more fully appear in the course of the following description. However, the drawing merely shows and the following description merely describes one embodiment of the present invention, which is given by way of illustration or example only.

In the drawing, like reference characters designate similar parts in the several views.

Fig. 1 is a longitudinal sectional view, partly in elevation, of an embodiment of the foregoing objects.

Fig. 2 is an end elevation, looking in the direction of the arrows 2-2 in Fig. 1.

Fig. 3 is a half sectional-half elevational view taken along the offset line 3-3 of Fig. 1.

Fig. 4 is a broken, longitudinal sectional view of a cutter comprised in the embodiment.

Fig. 5 is a perspective view of a stop means arranged on the tool for contacting the work.

Fig. 6 is a perspective view of a locking sleeve included in the tool.

Fig. 7 is a perspective view of a core element, including the cutter.

Referring more in detail to the drawing, the reference number 8 designates a shaft upon which a multi-fluted spiral cutter member 9 is mounted. The forward end of the shaft 8 is threaded at 10 with the tip thereof tapering and slit endwise, as suggested at 12. The slit end 12 is bored at 13 to receive the shank 14 of a pilot pin 15.

The cutter 9 has an internally tapering face 16 that engages the tapering end of the shaft 8, and clamps the portions of the slit end 12 upon

the shank 14 as the body of the cutter is screwed upon the threads 10.

A collar 17 is pinned to the shaft 8. Ball bearings 18 in a race 19 are disposed between the collar 17 and an abutment washer 20 on the shaft. A coil spring 21 is arranged between the abutment washer 20 and the end of a journaling sleeve 22 fixed in the body 23 of the tool. The inner end 24 of the cutter body 9 abuts the opposite end of the sleeve 22, when the cutter and shaft are moved to the right in Fig. 1 by means of the spring 21.

An internally threaded stop 25 is screwed upon the externally threaded portion 26 of the body 23. The stop 25 has lateral openings 27 for the discharge of material cut from the work 28. The outer end of the stop 25 engages the work and the inner end has crown teeth 29.

A locking sleeve 30 has an internal shoulder 31 opposite a shoulder 32 on the body 23. A coil spring 33 abuts the two shoulders and tends to move the sleeve 30 to the left in Fig. 1, whereby crown teeth 34 on the shell engage the teeth 29 on the stop 25. The threaded portion 26 of the body 23 has a longitudinal keyway 35 in which a key 36 slides. The key 36 and its way 35 prevent turning movement of the sleeve 30 upon the body 23, but permit longitudinal sliding movement of sleeve upon the body. The sleeve 30 is knurled, as shown at 37, for manipulation.

In the use of my present invention, a small pilot hole 38 is first drilled in the work 28. This hole 38 provides a recess for the pilot pin 15, as suggested in Fig. 1. The shaft 8 is connected with any suitable driving means (not shown).

After the pin 15 has been inserted in the recess 38 and the stop engages the work therearound, pressure is applied upon the shaft 8, to the left, in Fig. 1, as suggested by the arrow "A" in said figure. This causes the cutter 9 to be fed forward, such as to the broken line to the left of the cutter in Fig. 1. When the washer 20 strikes an internal shoulder 40 in the body 23, further forward feeding motion of the cutter 9 is stopped. When the present tool is released from the work, the cutter resumes its full line position shown in Fig. 1.

To adjust the stop 25, the sleeve 30 is drawn back, to the right in Fig. 1, against the action of the spring 33. This movement disengages the teeth 29 and 34, so that the stop 25 may be turned in either an unscrewing or a screwing-on direction.

It is to be understood that a preferred form of the present invention is that each tooth shall provide a given uniform amount of micrometer ad-

justment. For the sake of example only and not at all as a limitation, each tooth may represent a five ten thousandths of an inch adjustment. Of course the size of the teeth may be varied in order to change the amount of adjustment produced by each tooth.

While I have illustrated and described what I now regard as the preferred embodiment of my invention, the construction is, of course, subject to modifications without departing from the spirit and scope of my invention. I, therefore, do not wish to restrict myself to the particular form of construction illustrated and described, but desire to avail myself of all modifications that may fall within the scope of the appended claims.

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

1. In a device of the character described, in combination, a cylindrical body having an externally reduced portion forming a shoulder, and provided with external threads, said body having an axial bore and an internal chamber of greater diameter than said bore and providing a shoulder, said bore having a sleeve fixed therein providing at its innermost end thereof a shoulder, a shank extending through the bore of said body, a bit on said shank diametrically larger than the end of said sleeve, a collar and ball assembly on said shank and operable within the internal chamber of said body, a spring about said shank and between said collar and ball assembly, and the inner end of said sleeve normally to hold said bit retracted against the outer end of said sleeve, a stop having internal threads to engage the external threads on said body and rotatable to adjust same relatively to said body, a manually operable locking sleeve axially slidable on said body, interengaging teeth on said locking sleeve and stop for locking the stop against rotation, and a spring between the shoulder on said body and locking sleeve for yieldingly holding the locking device in engagement with said stop.

2. In a device of the character described, in combination, a cylindrical body provided at one

portion thereof with external threads and at the other end with an external shoulder, said body having an axial bore and an internal chamber at one end thereof of greater diameter than said bore and providing a ledge, said bore for a portion of its length being of enlarged diameter providing a shoulder, a countersink shank extending through the bore of said body, said countersink comprising said shank and a bit secured to the end thereof, a collar on said shank, a spring between said collar and shoulder in said body normally to hold said bit retracted against the end of said body, said ledge limiting the longitudinal movement of said shank in one direction, a stop having internal threads engageable with the external threads on said body and rotatable thereon adjustably relatively to said bit, a lock sleeve longitudinally slidable manually on said body and relatively to said stop to lock said stop in adjusted position, interengaging means on said lock sleeve and body to lock said lock sleeve against rotation and spring means between said external shoulder and sleeve to maintain said sleeve in locking engagement with said stop.

3. In a stop countersink, a threaded body element having an axial groove transecting the threads thereof and a reduced portion, a stop member adjustable on and relative to said body element and arranged to engage work, a manually operable sleeve surrounding said body element and the reduced portion thereof and longitudinally slidable on said body member, said sleeve provided with means to engage said axial groove to hold the same against turning movement, said stop member and sleeve having interengaging teeth, and a spring surrounding the reduced portion of said body member and seated in said sleeve to maintain the teeth of said sleeve and stop member engaged, said sleeve being manually operable against the tension of said spring to disengaging position with respect to said stop member, whereby said stop member may be adjusted on said body member.

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