Oct. 12, 1937. P. S. HAUTON 2,095,328

MECHANICAL PENCIL

Filed Oct. 1, 1932

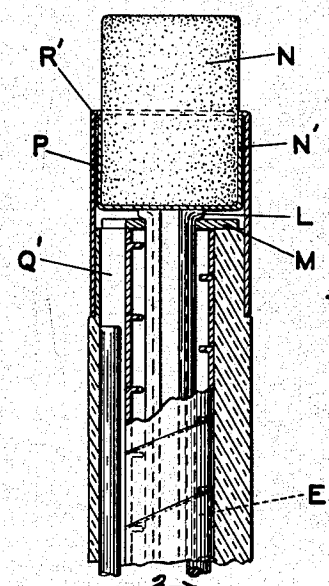
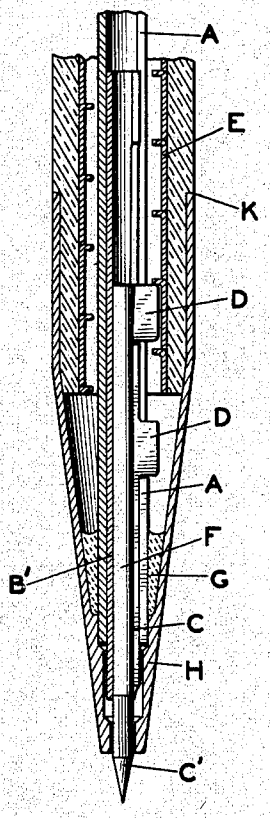


Fig. 1.

Fig. 3.



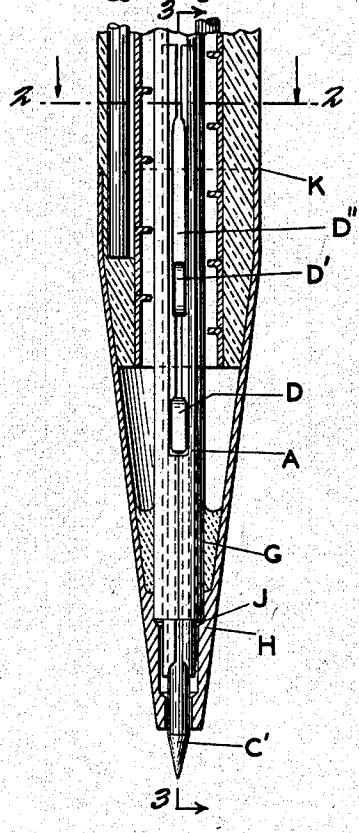


Fig. 4.

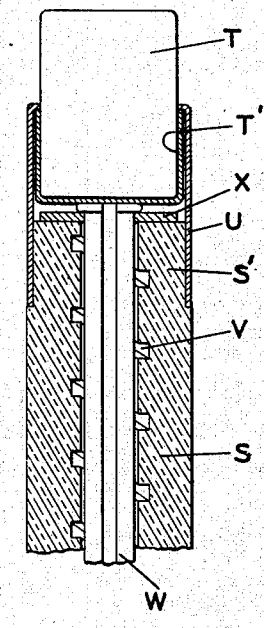
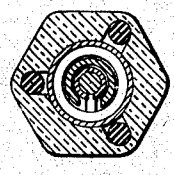


Fig. 2.



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2,095,328

MECHANICAL PENCIL

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Application October 1, 1932, Serial No. 635,843

1 Claim. (Cl. 120—18)

This invention relates to mechanical pencils and has more particular reference to pencils of the type in which a lead holder is fed longitudinally of the pencil by relative rotation of different portions of the pencil exterior.

Comprehensively stated, the invention embodies a rotatable lead holder in threaded engagement with an internally threaded member and adapted to be moved longitudinally thereof by mechanism operated from the writing end of the pencil, the parts being arranged in such a way as to afford a simplified construction which is easily assembled and which has the appearance and feel of the usual type of mechanical pencil.

More specifically stated, the present invention comprehends a rotatable slotted member which has a winged lead holder free to slide longitudinally therein and so arranged that the wings of the lead holder engage the threads of a threaded feed tube surrounding the slotted member. By rotating a manually rotatable member at the writing end of the pencil to which the slotted member is attached, the lead holder is fed longitudinally to expel or retract the lead. The end of the slotted member at the end of the pencil opposite to the writing end is secured against longitudinal movement in the pencil in such a way as to allow free rotation of the slotted member, thereby holding the manually operable member at the writing end in position in a simple and effective manner.

While one embodiment of the invention is illustrated in the accompanying drawing, it is to be understood that this embodiment merely serves as an illustration of the underlying principles of the invention so that they may be readily comprehended by those skilled in the art, and is not intended as limiting the invention to the specific form disclosed therein.

In said drawing:

Fig. 1 is vertical section partly fragmentary,

Fig. 2 is a section of Fig. 1 on the line 2—2,

Fig. 3 is a section of Fig. 1 on the line 3—3, and

Fig. 4 is a fragmentary end section of a modified form.

Continuing now by way of a more detailed description, a rotatable feed tube A, presenting a slot on one side which is closed off at the writing end of the pencil, for a reason to be indicated, encloses a lead holder indicated in its entirety by B. This holder B comprises a slit tubular member C, fitting the slotted tube and arranged to slide therein, and having an internal bore of substantially the same diameter as that of the writing lead C', so that the lead may be fitted snugly therein and frictionally retained thereby. The slitted lead holder which is cleared away at the writing end, as will be observed from an inspection of the drawing, affording an arrangement for facilitating the insertion of the lead and yet affording a firm grip on the lead. The lead holder B also has a wing D preferably formed therewith, adapted to engage the threads of an internally threaded member E which may be formed in any convenient manner, as for instance, as indicated in my copending application S. N. 561,829. A winged ejecting pin F is slidably mounted in the bore of the holder and has a wing D' projecting through a slot D'' in the lead holder for ejecting short lengths of lead which may remain in the holder and is similar to that described in my copending application for mechanical pencils above identified and needs no further description except to mention the fact that the lower end of the slotted tube A is closed off, as heretofore indicated, to stop the longitudinal movement of wing D. The threaded feed tube E terminates short of the closed portion of the slotted tube A, so that the wing D may disengage from the threads and its longitudinal movement may be arrested by the closed end of the slotted feed tube A while the ejecting pin is still being fed. In order to rotate the feed tube A, it is soldered or otherwise affixed at G to a tapered manually operable rotatable lead guide tip H at the writing end of the pencil, the tip being shouldered at J, forming a restricted opening to receive and firmly support the lower end of the slotted tube. The upper portion of the rotatable tip is recessed in the body portion of the pencil and its upper end K abuts against an annular shoulder K in the body portion, so as to afford a smooth exterior to the pencil and so that the tip H turns freely about the body portion and rotates the slotted feed tube attached thereto, the rotation of the tip causing the slotted tube to move the lead holder B spirally by engagement of wing D and the threads of tube E, except when the lead holder is near the tip, as will be readily understood. The upper swaged or spun end of the slotted tube A turns freely on a spacing washer M freely set on the top of the threaded feed tube, which in turn, is preferably flush with the top of the casing to afford a substantial footing for the washer, although this is not essential since the washer might conform to the top of the threaded tube, thereby affording space for the casing to be carried upwardly beyond the end of the slotted tube.

The top of the pencil may be and preferably is, finished off with an eraser N, carried in an eraser holding cup N', which, in turn, is supported in a suitable guide ferrule P, fitting the restricted end of the casing. The casing Q, which may consist of any suitable material, has a plurality of spare lead receiving openings Q' which are accessible through suitable openings R in the washer M, in the event the washer is of the diameter indicated in the drawing. The washer openings may, however, be dispensed with in the event a washer of smaller diameter is used, as will be readily understood.

The modification shown in Fig. 4 shows a construction in which a barrel S has a restricted shouldered end S' similar to the restricted end of the barrel shown in Figs. 1, 2, and 3 to receive a sleeve or ferrule U projecting beyond the end of the casing S to receive an eraser in a manner to be hereinafter described. The barrel S has a spiral thread V cut or otherwise formed therein to guide a winged follower carried by the slotted tube W, which in turn, is supported at its upper end by a washer X similar to the construction shown for supporting the end of the slotted tube A shown in Figs. 1, 2, and 3. The sleeve U supports an eraser T having its lower end enclosed in a cup T', the sleeve U serving to finish off the eraser end of the casing and support the eraser, as will be readily understood. The writing end of the pencil and feed mechanism is similar to that shown in Figs. 1, 2, and 3 and requires no further description.

The present application is in part, a continuation of my application Serial No. 561,829.

I claim:

A mechanical pencil comprising a casing having an axial bore, lead feed mechanism including a slotted tube located within the bore, a tapered guide tip journalled on the lower end of the casing and secured to one end of the slotted tube, a washer having spaced peripheral openings therethrough and resting on the upper end of the casing, the upper end of the slotted tube being expanded over the washer and inwardly of said peripheral openings to firmly hold the tip against the casing and prevent longitudinal displacement of the slotted tube and the tip relatively to the casing, a sleeve engaged over the upper end of the casing and projecting therefrom, and an eraser cup engaged in the projected end of the sleeve immediately above the washer, the inner wall of the casing having spare lead receiving recesses therein in spaced relation about said lead feed mechanism, the spare leads being insertable into and removed from the recesses through said peripheral openings in the washer upon the removal of the eraser cup from the sleeve.

PAUL S. HAUTON.