June 23, 1942. C. E. WEHN 2,287,364

MECHANICAL PENCIL

Filed Oct. 6, 1941

Fig. 1.

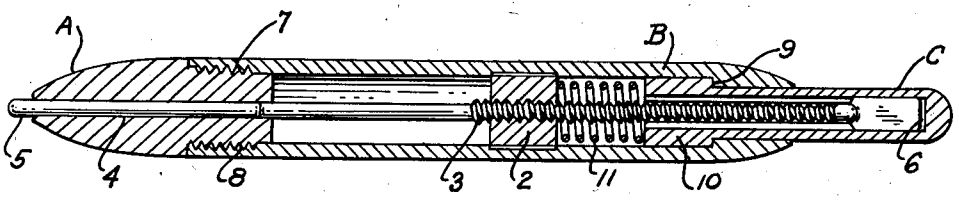


Fig. 2.

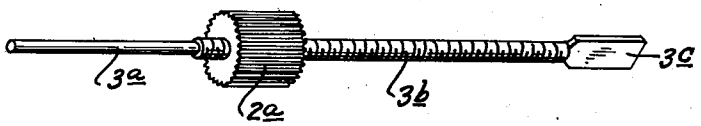


Fig. 4.

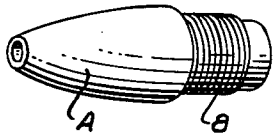


Fig. 3.

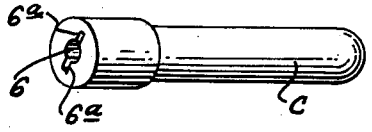
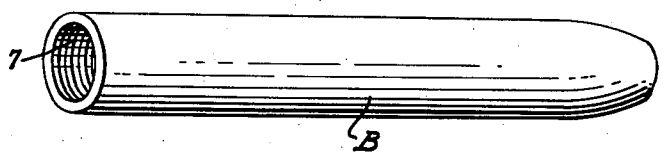


Fig. 5.



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MECHANICAL PENCIL

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Application October 6, 1941, Serial No. 413,772

3 Claims. (Cl. 120—18)

This invention relates to a mechanical pencil and especially to the improvement on the propelling mechanism whereby the lead or crayon carried by the pencil is manually advanced as it wears away.

The object of the present invention is generally to improve and simplify the construction and operation of pencils of the mechanical types; to provide a mechanical pencil in which the number of parts employed is reduced to a minimum; to provide a mechanical pencil which consists of a barrel section, a point or lead carrying section, and a propelling mechanism for advancing the lead as it wears away; to provide a mechanical pencil in which the point or lead carrying section is readily removable to permit insertion of new leads; to provide a propelling mechanism consisting of a threaded propelling rod and a nut relatively rotatable with relation to each other to advance or retract the threaded propelling rod; to provide a floating rotatable member with which the propelling rod telescopes to provide a key or spline connection between the floating rotatable member and the propelling rod to compel rotation of the two members in unison and further to provide a spring actuated friction to resist relative rotation between the parts carrying the propelling mechanism.

The invention is shown by way of illustration in the accompanying drawing, in which

Fig. 1 is a central vertical longitudinal section of the pencil,

Fig. 2 is a perspective view of the threaded propelling rod and the nut with which it cooperates,

Fig. 3 is a perspective view of the rotor whereby the propelling rod is rotated,

Fig. 4 is a perspective view of the pencil point, and

Fig. 5 is a perspective view of the pencil barrel.

Referring to the drawing in detail and particularly to Fig. 1, A indicates the point of a pencil, B the barrel and C a rotor which will hereinafter be described.

Secured within the barrel and against rotation is a nut generally indicated at **2** and extending through said nut is the threaded rod **3**. The forward end of the rod is smooth or unthreaded as shown at **3a**, as this end will, during operation of the pencil, enter a passage **4** formed in the point of the pencil, said passage being provided for the reception of a lead **5** or the like. The major portion of the rod is threaded as shown at **3b** and the rear end is flattened, as shown at **3c**, to form a driving connection between the rod **3** and the rotor C.

The rotor, as shown in Fig. 1, extends through the rear end of the pencil a sufficient distance to permit it to be readily grasped and rotated when the propelling rod **3** is to be advanced or retracted with relation to the lead receiving passage **4** formed in the pencil point. The manner in which rotation is transmitted from the rotor C to the rod **3** is as follows:

A longitudinally extending passage **6** is formed within the rotor, of a diameter substantially equal to the rod **3** and opposite sides of said passage are grooved, as shown at **6a**, to receive the flattened end **3c** of the rod. A splined telescoping connection is formed between the rotor and the rod **3** so that when the projecting end C is grasped and manually rotated, such rotation will be transmitted to the rod **3** causing it to rotate within the nut and it will accordingly be advanced or retracted with relation to the lead receiving passage, depending upon the direction of rotation.

The barrel B of the pencil is tubular in form. Its forward end is internally threaded, as shown at **7**, to receive a threaded extension **8** formed on the pencil point. The nut **2**, which is mounted within the barrel, is longitudinally fluted or corrugated, as shown at **2a**, on its external surface and is pressed into the barrel and as such is secured both against endwise and rotary movement with relation to the barrel. Formed adjacent the rear end of the barrel is an interior shoulder **9** and engaging said shoulder is a collar or head **10** formed on the inner end of the rotor C. A helical compression spring **11** is interposed between the head **10** and the rotor and the nut **2**. This spring is important as it exerts sufficient pressure on the head **10** to cause it to engage the shoulder **9** with sufficient pressure to frictionally resist rotation of the rotor C. Without such frictional resistance, the rotor C would be entirely too free and might accordingly be accidentally rotated to advance or retract the propelling rod, but, due to the friction imposed by the spring, sufficient frictional resistance is provided to insure a smooth action and will positively prevent accidental rotation.

In actual practice, if a lead is to be placed in the point of the pencil, the rotor C is first grasped and rotated in a direction to fully retract the propelling rod **3**. When this is done, the point is unscrewed and removed, as shown in Fig. 4, and the lead may then be introduced from the rear end. When the lead is in place, the point is again screwed back into the barrel

and then, by rotating the member C in the opposite direction, the forward end of the propelling rod will enter the lead receiving passage and engage the lead and force it forwardly and outwardly through the outer end of the point and as the lead wears away, it can be advanced again and again until completely consumed, when the point may again be removed and new lead introduced.

The pencil such as here shown, is exceedingly simple in construction, a minimum of parts is employed and the action of the parts is smooth and dependable, due to the frictional resistance applied to the rotor C. The pencil lends itself to the use of ordinary pencil leads and may also be employed in conjunction with crayons and the like.

While certain features of the invention have been more or less specifically described for purposes of illustration, it is to be understood that various changes may be resorted to, all within the scope of the appended claims.

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

1. In a pencil having a barrel section and a point section at its forward end, with a lead receiving passage formed therein, a nut secured within the barrel against rotation, a threaded rod extending through the nut and into the lead receiving passage, a rotor projecting through an opening formed in the rear end of the barrel, a splined telescoping connection formed between the rotor and the threaded rod, means securing the rotor against endwise removal from the barrel, and a helical spring surrounding the threaded rod and interposed between the nut and the rotor to frictionally resist rotation of the rotor.

2. In a pencil having a barrel section and a point section at its forward end, with a lead receiving passage formed therein, a nut secured within the barrel against rotation, a shoulder formed within the barrel rearwardly of the nut, an opening formed in the barrel centrally of said shoulder and extending through the rear end of the barrel, a rotor fitting said opening and extending beyond the rear end of the barrel, a head member on the rotor within the barrel and frictionally engaging the shoulder, a threaded rod extending through the nut, one end of said rod extending into the lead receiving passage and the other end extending into the rotor, a splined telescoping connection formed between the rotor and the rod whereby rotation of the rotor is transmitted to rotate the rod, and means for frictionally resisting rotation of the rotor.

3. In a pencil having a barrel section and a point section at its forward end, with a lead receiving passage formed therein, a nut secured within the barrel against rotation, a shoulder formed within the barrel rearwardly of the nut, an opening formed in the barrel centrally of said shoulder and extending through the rear end of the barrel, a rotor fitting said opening and extending beyond the rear end of the barrel, a head member on the rotor within the barrel and frictionally engaging the shoulder, a threaded rod extending through the nut, one end of said rod extending into the lead receiving passage and the other end extending into the rotor, a splined telescoping connection formed between the rotor and the rod whereby rotation of the rotor is transmitted to rotate the rod, and a helical compression spring interposed between the head member on the rotor and the nut to maintain frictional contact between the head member on the rotor and the shoulder within the barrel.

CHARLES E. WEHN.