

# UNITED STATES PATENT OFFICE.

JOHN C. WAHL, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE WAHL COMPANY, OF WILMINGTON, DELAWARE, A CORPORATION OF DELAWARE.

## MECHANICAL PENCIL.

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*To all whom it may concern:*

Be it known that I, JOHN C. WAHL, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Mechanical Pencils, of which the following is a specification.

My invention is an improvement in mechanical pencils and has for its object the provision of an improved feeding action for pencils of this type.

My invention is especially designed to be used in connection with the mechanical pencils disclosed in the patent to Keeran, No. 1,151,016, granted August 24, 1915, and is especially designed to provide a means of retracting the lead of the pencil in case this lead has been protruded through the tip farther than necessary.

My invention may be best understood by reference to the accompanying drawings, of which:

Fig. 1 is a sectional view of a pencil equipped with my invention;

Fig. 2 is a section along the line 2—2 of Fig. 1;

Fig. 3 is an enlarged view of the plunger and lead;

Fig. 4 is a detail of the end of the plunger;

Fig. 5 is a section along the line 5—5 of Fig. 4;

Fig. 6 is a section along the line 6—6 of Fig. 1, and

Fig. 7 is a section along the line 7—7 of Fig. 1.

My improved pencil consists of a casing 10, which is provided with a conical end 11, soldered in which is a tube 12, in which is a thread 13 adapted to receive the tip 14. This tip may be either provided with longitudinal ridges, as shown in the cited patent to Keeran, or may be left smooth. A lead 15 is guided by a rear end of the tube 12 into the tip 14. The tube 12 is made of approximately rectangular section, as is shown by the section in Fig. 7, and serves to prevent the rotation of the plunger 16, which serves to force the lead through the tip. The plunger 16 is rotatably mounted into the crosshead 17, which is provided with screw threads 18, preferably of rectangular section, which engage in a threaded sleeve 19 secured to the interior of the pencil casing 10. As before noted, the crosshead 18 is

rotatably mounted upon a plunger 16, and this mounting is secured by the expedient of providing the plunger 16 with a cylindrical portion 20, which extends through a suitable hole in the crosshead 17 and is upset over a washer 21 at the upper end of the crosshead.

For the purpose of rotating the crosshead 18, I have provided a pair of magazines 22 and 23, which embrace the crosshead 17 and which are soldered into a head 24, on which is frictionally mounted the cap or tassee 25. The structure of the magazines and tassee is similar to the structure of these parts shown in the cited patent to Keeran. The plunger 16 at its forward end is provided with a hole 26 and a plurality of slots 27, thus forming a set of prongs 28. Normally these prongs are sprung inwardly, so as to make the hole 26 slightly smaller than the end of the lead 15, so that when the lead is inserted in the hole 26 it will be held in said hole by frictional engagement with the prongs 28.

Mounted on the upper end of the tube 12 is a funnel 29, which is rigid with the tube 12 and is supported in the inside of the casing. A second funnel 30 is soldered to the lower ends of the magazines 22 and 23, thus serving to hold them together.

The operation of my improved pencil is as follows:

When it is decided to feed the lead 13 through the tip 14, the tassee 25 is rotated, thereby rotating the crosshead 17 and advancing the plunger 16, which is held from rotation on account of the rectangular section of the tube 12. The lead is thus fed forward until it is all used. When it is desired to place a new lead in the pencil the crosshead 17 and its connected plunger 16 is removed from the end of the pencil by unscrewing it by means of the tassee 25. A new lead is then dropped in and is guided in the tube by the funnel 29. The crosshead and plunger are then reinserted and the tassee 25 rotated until the lead 15 is forced through the tip 14.

It is to be noted that the plunger 30 is provided with a round hole approximately the diameter of the outside of the plunger 16, as shown in Fig. 6, since in order to advance the plunger it is necessary that the magazines to which the funnel 30 is rigidly attached be rotated relative to the plunger 16.

In the event that the lead 15 has been advanced too far through the tip 14, it will be retracted through said tip by simply screwing the tassel 25 in the reverse direction, thus drawing the crosshead 17 towards the back of the pencil. Since the lead 15 is frictionally held in the end of the plunger 16, it will also be retracted at the same time as the plunger.

While I have described the tube 12 as being of rectangular section throughout its entire length, it is obvious that this will not be necessary, since it is only necessary to provide a rectangular section at the bottom of the funnel 29.

Many departures from and variations may be made in the specific structure herein shown without departing from the spirit of my invention, since I claim:

In a mechanical pencil comprising a barrel having an internally threaded section therein and being tapered at one end; a tip mounted on the tapered end, and a lead guide tube rectangular in cross section and mounted in the forward end of said barrel; a lead feeding mechanism comprising a crosshead loosely mounted on the rear end of the plunger rectangular in cross section and engaging said internally threaded section in the barrel, a rotatable means including a reserve lead magazine, for rotating the crosshead within the barrel and causing the said plunger to enter the lead guide tube and move forward in a nonrotatable movement thereby ejecting a lead through the tip.

In witness whereof I have hereunto subscribed my name.

JOHN C. WAHL.