April 15, 1924. 1,490,244

J. C. WAHL

SELF LOADING MAGAZINE PENCIL

Filed Dec. 4. 1917

Fig. 1.

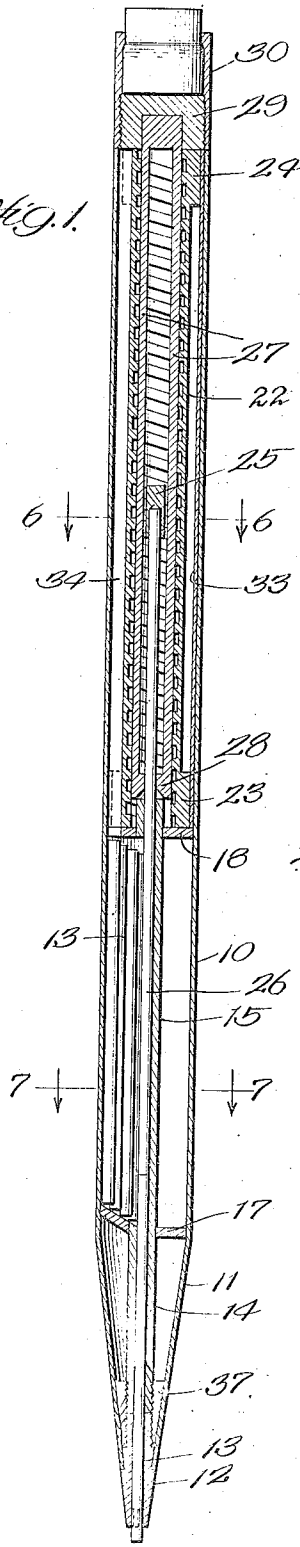


Fig. 2.

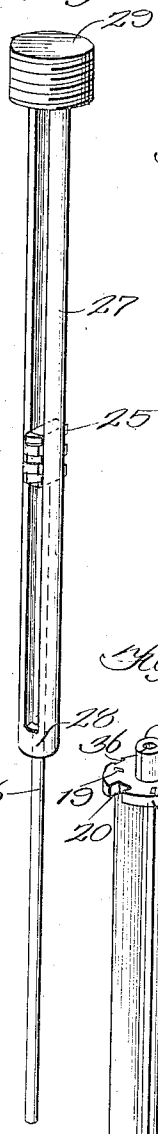


Fig. 3.

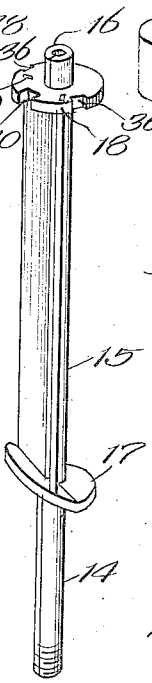


Fig. 4.

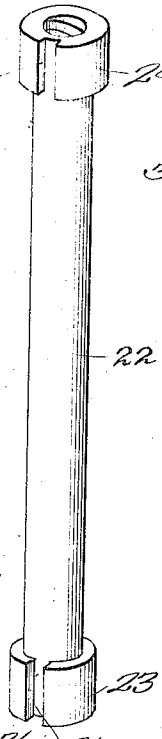


Fig. 5.

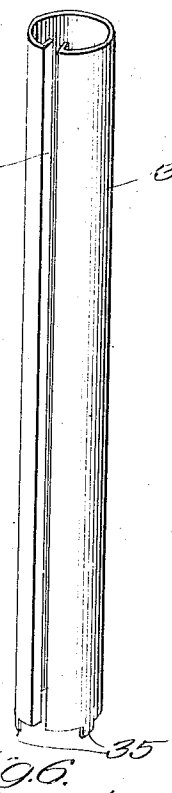


Fig. 6.

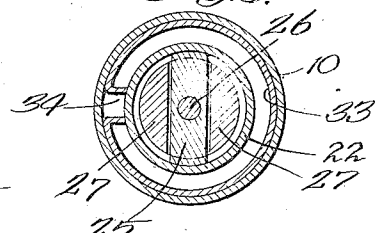
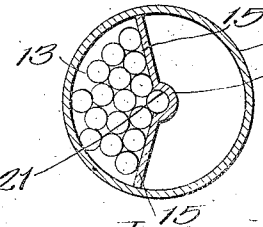


Fig. 7.



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Patented Apr. 15, 1924. 1,490,244

UNITED STATES PATENT OFFICE.

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

SELF-LOADING MAGAZINE PENCIL.

Application filed December 4, 1917. Serial No. 205,280.

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 Self-Loading Magazine Pencils, of which the following is a specification.

My invention is a mechanical pencil of the particular species in which a lead of small diameter is propelled through a tip by means of a screw-driven plunger. Pencils of this general type are described in the issued patent to Keeran, No. 1,130,741.

The object of my invention is to provide a pencil of the above mentioned type, with a self loading tip mechanism, to the end that the manual loading of the tip with a new lead, which is necessary in the Keeran pencil, may be avoided and the tip reloaded by certain manipulations of the plunger without the necessity for the user handling the lead with his fingers.

Another object of my invention is to provide a mechanical pencil with a magazine for holding an extra quantity of leads and to provide mechanism for feeding a new lead from said magazine into the pencil tip as the same may be required.

The above and other objects of my invention will be apparent to those skilled in the art from a perusal of the following specification and claims.

My invention may be best understood by reference to the following figures, of which—

Fig. 1 is a longitudinal section of my improved pencil;

Fig. 2 is a detail of the plunger and plunger-propelling means;

Fig. 3 is a detail of the magazine and guiding tubes for the lead;

Fig. 4 is a detail of the upper portion of Fig. 1;

Fig. 5 is an additional detail;

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.

Similar numerals of reference refer to like parts in all the figures.

My improved pencil consists of a casing 10, which is preferably of metal, having a tapered end 11, mounted in which is a steel tip 12 having longitudinal ridges therein as described in the cited patent to Keeran. The tip 12 serves to support a lead 13 of small diameter, and as said lead is forced through the tip 12 by means hereinafter to be described the ridges cut longitudinal grooves in the lead, thereby serving the double purpose of preventing the lead from falling out of the tip 12 and also preventing rotation of the lead relative to the tip. Mounted in the casing 11 and abutting the rear end of the tip 12 is the assemblage shown in Fig. 3. This consists of a tube 14, preferably formed from a piece of sheet metal, which is spread out at its middle portion into a V-shaped section 15 (Fig. 7) and reconstricted at its upper end 16 into a tube. The V-shaped section is terminated by discs 17 and 18, which are held in their place by lugs 19 on the wings of the V 15, said lugs being adapted to be riveted in suitable holes in the washers 17 and 18. The entire assemblage shown in Fig. 3 is located in the interior of the casing 10 in the position shown in Fig. 1, from which it will be apparent that the tube 14 forms a continuation of the whole in the tip 12. The V-shaped portion 15, taken in conjunction with the casing 10, forms a magazine 21 for surplus leads, as shown in Fig. 7. The disc 18 is provided with a slot 20, for the purpose of providing an aperture by which the magazine formed by the casing and the magazine 21 may be reloaded.

In the interior of the casing 10 and adjacent to the disc 18 is fastened an assemblage which consists of the tube 22, provided with enlarged ends 23 and 24. The tube 22 is threaded on its interior and said threaded portion engages a threaded crosshead 25, to which is attached the plunger 26. The plunger 26 is actuated by a fork 27, the tines of which are united at their lower ends by a piece 28, through which is a hole serving to guide the plunger 26. The crosshead 25 slides freely in the fork 27. The upper portion of the fork 27 is fastened to a threaded piece 29, upon which is screwed a suitable cap 30, by means of which the piece 29, and consequently the fork 27 and plunger 25, may be turned.

The enlarged ends 23 and 24 of the tube 22 have slots 31 and 32 therein, and the tube 22 is surrounded by a casing 33, formed of flat metal and having the section shown in Fig. 5, from which it will be apparent

that said casing has a channel 34 in one side thereof. On the bottom end of the casing 33 is a lug 35, which is adapted to engage a recess 36 in the disc 18, thus preventing the casing 33 from turning relative to said disc.

The slots 31 and 32 are of sufficient width to permit the casing 33, with the channel 34, to be slid over the assemblage of the tube 22, and the enlarged portions 23 and 24. The channel 34 will thus, in combination with the outside casing 10, make a channel to guide the leads through the slot 20, thus providing a means for reloading the magazine 21 when desired.

My improved pencil is assembled as follows: A threaded piece 37 is soldered in the forward end of the casing 10 and into this piece the tip 12 is screwed, thus making a tight joint between the casing 10 and the tip 12, which is provided with shoulders as shown in Fig. 1. The assemblage shown in Fig. 3 is next inserted, then the casing shown in Fig. 5 is inserted, the lug 35 serving to locate said casing with reference to the assemblage shown in Fig. 3. The assemblage shown in Fig. 4 is next inserted and the sleeve 33 is united to the casing by a drop of solder and also the enlarged head 24 is soldered to the interior of the sleeve 33. The fact of the upper portion of the mechanism being united to the casing of course serves to hold the assemblage shown in Fig. 3 in its proper position. The assemblage shown in Fig. 2 is next inserted, the plunger 25 being screwed into the interior of the tubing 22. As in the pencil described in the cited patent to Keeran, the fork 27 may be partially withdrawn at any time until it is stopped by contact of the end 28 with the plunger 25. The amount that the fork 27 has been withdrawn will be a measure of the length of the unused lead remaining in the tip 12.

The operation of my improved pencil is as follows. Assume a lead 13 to be in the tip 12 as shown in Fig. 1. The lead is propelled by means of the plunger 26 as said lead shall be worn away by use, the plunger 26 being of course advanced by means of turning the cap 30, which, as herebefore explained, serves to turn the crosshead 25 in the threaded interior of the tube 22. When the lead has been used and it is desired to insert a new lead into the tip, the head 30 is turned so as to withdraw the plunger 26 from the interior of the magazine 21, that is, the plunger is withdrawn so as to be above the disc 18. As soon as the plunger is out of the way a fresh lead will fall into the groove 36′ (Fig. 7), it being of course assumed that during the reloading process the pencil as a whole is held in an approximately horizontal position with the charged magazine 21 uppermost. The plunger 26 is then advanced by means of the head 30 and will engage the lead which has just fallen into the groove 36′ and propel said lead into the tube 14. The lead just inserted in the tube 14 will be propelled by the plunger until it encounters the rear end of the old lead which is in the tip 12 and will force this small length of old lead out of the tip and the new lead may be protruded ready for use.

In order to reload the magazine 21 it is only necessary to unscrew the plunger 26 until it is beyond the disc 18, when the head 30 and attached fork 27 as a whole may be pulled out of the casing 10 until stopped by contact of the piece 28 on the crosshead 25. The leads are then inserted one by one into the channel 34, and the pencil held in a vertical position. The leads will thereupon fall into the magazine 21, being guided thereto by the channel 34. Sufficient leads may be inserted until the magazine 21 and the channel 34 are filled. The head 30 is then returned to its normal position, thus closing the aperture through which the channel 34 was loaded and the crosshead 25 advanced to insert a new lead into the tip 12.

Many changes and departures may be made from the precise structure herein described without departing from the spirit of my invention, since I claim:

1. In a mechanical pencil, the combination of a combined magazine and guiding tube, said magazine and tube being formed of a piece of sheet metal formed at its lower end into an approximately tubular section and at its upper end into an approximately V section, and a disc washer sliding over said tube and fastened to the end of said V section.

2. In a mechanical pencil, a combined magazine and guiding tube, said magazine being formed of a single piece of flat metal having the ends thereof formed into an approximately tubular section and the middle portion thereof formed into an approximately V section, and discs secured to the ends of said V section.

3. In a mechanical pencil, the combination of a combined magazine and guiding tube, said magazine and tube being formed of a piece of metal formed at its lower end into an approximately tubular section and at its upper end into an approximately V-section, and a disc washer slid over said tube and fastened to the end of said V-section, the disc washer having an inclined portion directed towards the V-section.

4. In a mechanical pencil, a combined magazine and guiding tube, said magazine being formed of a single piece of flat metal having the ends thereof formed into an approximately tubular section and the middle portion thereof formed into an approxi-

mately V-section, and discs at the ends of said V-section, one of said discs being provided with an opening whereby pencil leads may be placed in the magazine.

5. In a mechanical pencil, a combined magazine and guiding tube, said magazine being formed of a single piece of flat metal having the ends thereof formed into an approximately tubular section and the middle portion thereof formed into an approximately V-section, and discs at the ends of said V-section, one of said discs being provided with an opening whereby pencil leads may be placed in the magazine and the other disc having an inclined portion for feeding the leads from the magazine to the guide tube.

6. A mechanical pencil comprising a casing, a tip secured to one end of the casing, a guide tube leading to the tip, a magazine carried by the guide tube for holding the pencil leads, an interiorly threaded tube engaging the end of the magazine, arms extending longitudinally of the threaded tube, a threaded cross head carried between the arms and engaging the threads of the tube, a rod carried by the cross head, said rod engaging a lead for feeding the same to the tip, and a casing surrounding the threaded tube, between the tube and first-mentioned casing, said last-mentioned casing having a guideway therein for feeding leads to the magazine.

7. A mechanical pencil comprising a casing, a magazine supported in the casing for receiving a supply of lead, a guide tube communicating with the magazine for receiving a single lead therefrom, a tube received in the casing on one end of the magazine, means operated by said tube for feeding a lead through the guide tube, an enlargement on each end of the tube provided with a slot therethrough, and a casing carried by the enlargements and surrounding the tube, said casing having its longitudinal edges inturned to be received in the slots of the enlargements, said inturned edges forming a guideway for introducing leads to the magazine.

In witness whereof I have hereunto subscribed my name.

JOHN C. WAHL.