March 27, 1928. 1,663,742

E. W. WILSON

PENCIL

Filed April 21, 1926

Fig. 1.

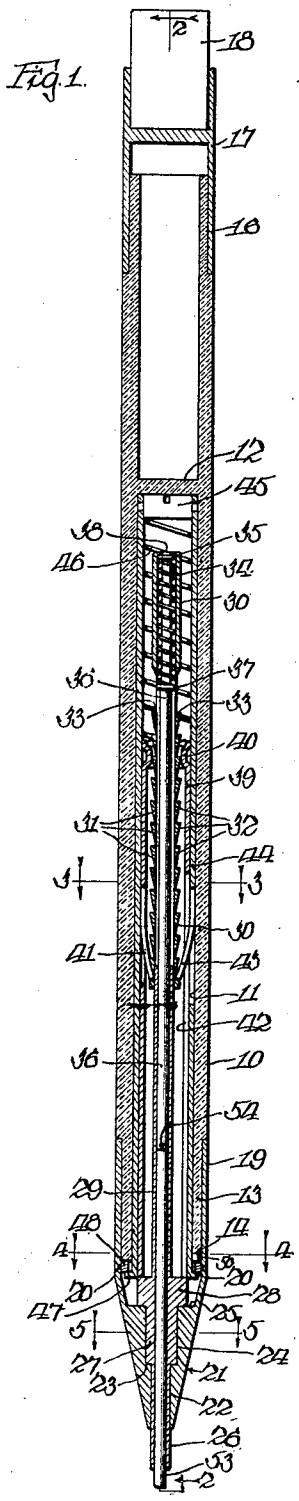


Fig. 2.

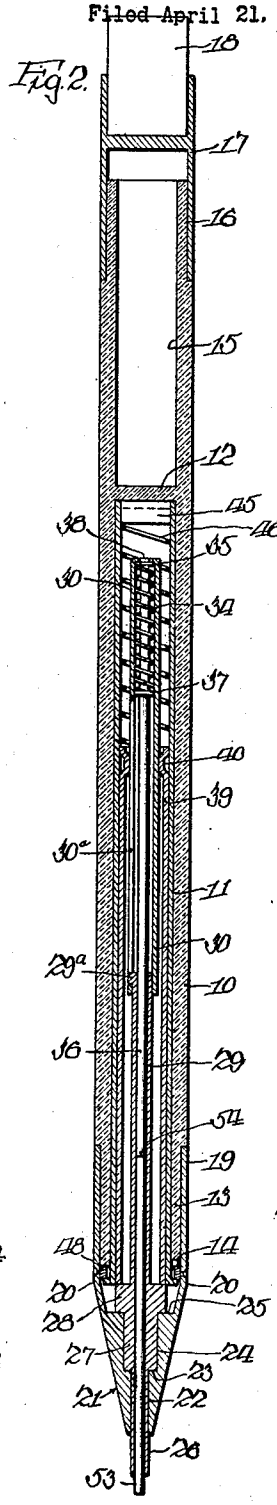


Fig. 3.

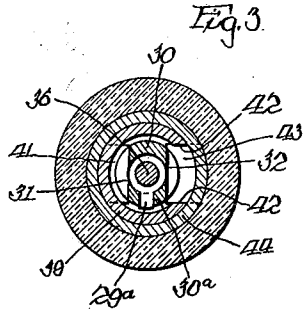


Fig. 4.

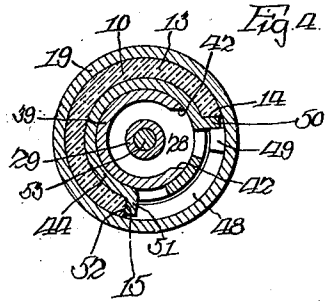


Fig. 5.

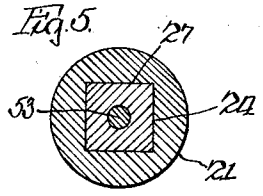
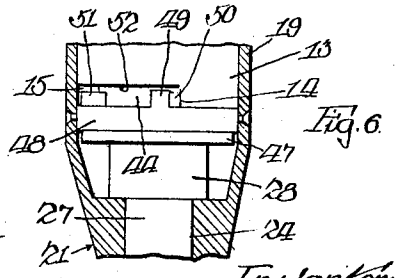


Fig. 6.



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Patented Mar. 27, 1928. 1,663,742

UNITED STATES PATENT OFFICE.

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PENCIL.

Application filed April 21, 1926. Serial No. 103,466.

In the present construction of mechanical pencils, that is, the type having a magazine to carry extra leads, to be replaced when exhausted, the leads are fed to the proper length for writing from their holder by means of a screw which is turned manually. It is often necessary to have several pencils of this and other types at hand as in the case of a court reporter taking notes, as there is not sufficient time allowed to turn the screw to feed the lead, when it is used to the holder.

My invention is in the construction, of a lead pencil, that is simple, strong, durable, having few working parts, positive in operation and will feed the lead to the required length by merely pressing the point of the pencil downwardly, this operation may be done while writing and with no waste of time, the time required to press the point of the pencil being only a fraction of the time required to change pencils.

An object of my invention is, the construction of a lead pencil that will feed the lead to the required length by pressing the point downwardly, having practically all the working parts for feeding the lead concealed.

Another object of the invention is, to construct a pencil that will feed the lead to the required length by pressing the point downwardly, having a yielding cushion for the lead to prevent breakage of the same, should the operator press too hard while writing.

Still another object of the invention is, to construct a pencil that is simple in construction, self feeding and provided with a receptacle for holding extra leads and provided with feed and retaining pawls, that will feed and retain the lead to the position it is fed until the lead is used.

A still further object of the invention is, to construct a pencil that can be loaded or filled by inserting the lead through the point, the feed and retaining pawls being thrown out of engagement by turning the lower portion of the pencil a quarter turn in one direction, the lead is then inserted and turning the same in the opposite direction to its original and operative position the pencil is then ready to be used.

Further objects and advantages of the invention will be disclosed in the following specification, reference being had to the accompanying drawing, constituting a part of this specification in which similar characters of reference denote corresponding parts in all the views, and which—

Figure 1 is a vertical longitudinal sectional view.

Fig. 2 is a vertical longitudinal view taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 1.

Fig. 6 is a view partly in section and partly in elevation of the lower portion of the pencil showing the stops and stop lug.

In carrying out the embodiment of my invention, 10 indicates the body of the pencil which may be made of bakelite or any other suitable material, having a cylindrical opening 11 extending upwardly to a partition wall 12 located about three-quarters of the length of the body. The lower portion of the body is reduced as at 13 and is provided with a cut-away portion forming the stops 14 and 15 which will be more fully described hereinafter.

The upper portion of the barrel 10 has a cylindrical opening 15 extending downwardly to the partition wall 12 and is provided with a reduced portion 16 to receive the cap 17 provided with an eraser 18 secured therein, which when assembled as shown in Figs. 1 and 2 forms a receptacle or container for extra leads. Referring more particularly to the lower portion of the pencil, the reduced portion 13 has the cylindrical sleeve 19 extending downwardly to a point below the body portion 10 of the pencil as indicated at 20 which terminates in a truncated cone 21 and is provided at its lower extremity with a cylindrical opening 22 which extends to a point as indicated at 23 and is provided with a square opening 24 terminating at a point as indicated at 25. The sleeve 26 extends through the cylindrical opening 22 to a point beyond the extremity of the truncated cone 21 and is provided with a square portion 27 that fits loosely within the square opening 24 and which is provided at its upper end with an enlarged portion 28 and a lead carrier 29 extending upwardly of the enlarged cylindrical portion 28 and which telescopes within the tubular member 30. The tubular

member 30 is provided with a plurality of ratchet teeth on opposite sides as indicated at 31 and 32 extending to a point as indicated at 33—33. The upper portion of the tubular member 30 forms a housing for the compression spring 34 the upper end of which rests against a perforated washer 35 and its lower end rests against a head 37 of the downwardly extending plunger 36.

It will be seen in Figs. 1 and 2 that the compression spring 34 is interposed between the washer 35 and the head 37 of the plunger 36 and normally tends to force said plunger downwardly, and is limited in its movement by the head 38.

The tubular member 30 is guided in the feed pawl member 39 the upper end of which is provided with an annular inwardly extending bead 40.

Formed in the side wall of the tubular member 39 is a feed pawl 41 which extends inwardly and engages the ratchet teeth 31 formed in the tube 30. Directly opposite to the feed pawl 41 the feed pawl member 39 is provided with a slot 42 extending downwardly a substantial distance to permit the retaining pawl 43 to extend therethrough, and engage the ratchet teeth 32 of the tubular member 30. The pawl 43 is formed in the side wall of the retaining pawl member 44 which surrounds the feed pawl member 39 throughout its length and extends upwardly to the partition 12 formed in the body portion 10. The upper portion of the retaining pawl member 44 is provided with a cap 45 which is pinned thereto, and contains a compression spring 46 resting against the cap 45 and bearing upon the top edge of the feed pawl member 39 affording a tension on the feed pawl member which causes it to bear against the top edge of the enlarged cylindrical portion 28.

The retaining pawl member 44 surrounds the feed pawl member 39 and is provided at its lower extremity with an outwardly extending flange 47 which engages below a ring member 48 fixed to the inner side of the sleeve 19. The ring 48 is provided on its top side with an upwardly extending lug 49 which engages the outwardly turned ears 50 and 51 of the retaining pawl member 44.

Referring more particularly to Figs. 2 and 3 it will be seen, that the lead carrier 29 is provided at its extreme upper end with an outwardly extended lug 29^a which extends through a slotted opening 30^a in the tubular member 30.

In this construction, the lead carrier 29 is guided at its lower end into the truncated cone 21 and at the upper end telescopes into the tubular member 30, said tube being guided into the feed pawl member 39 to insure perfect alignment. The plunger 36 extends partially into the lead carrier 29 and is held in constant engagement with said carrier at all times, as will be more clearly set forth.

As is clearly shown in Figs. 4 and 6 the lower portion 13 of the body 10 is cut away for about 90 degrees, as indicated at 52 forming the stops 14 and 15 and provides the stop or rest for each of the outwardly turned lugs 50 and 51. The sleeve 19 may be rotated for about 90 degrees, and, limited in its movement by the upwardly extending lug 49 contacting with the lugs 50 and 51 and the lead carrier 29 provided at its lower end with the squared portion 27 as above described, will be rotated therewith, and the extended lug 29^a engaging the slot 30^a of the tubular member 30 will cause said tube to be rotated about 90 degrees, also. The purpose of rotating the shell 19 and the elements as above described about a quarter of a turn is for disengaging the feed pawl 41 and the retaining pawl 43. Rotating the sleeve 19, in the reverse direction will restore the ratchet teeth of the tubular member 30 in engagement with the pawls.

The lower end of the sleeve 26 is provided with a yielding tension against the side wall of the inserted lead 53 as is well known in the construction of mechanical pencils.

To insert new leads in the pencil, the shell portion as indicated at 19 is rotated about 90 degrees, the stop 49 will then engage the lug 51 and limit the movement of said shell in that direction, and as above described will rotate the lead carrier 29 and the tube 30 provided with ratchet teeth, disengaging the pawls 41 and 43 when the lead 53 may be inserted through the sleeve 26 forcing the plunger 36 upwardly, and through the spring 34 will raise the tubular member 30 until the lower portion of the slot 30^a contacts with the lug 29^a thus limiting the upward movement of the plunger 36. After this point has been reached the shell 19 is rotated about 90 degrees, in the opposite direction until the lug 49 contacts with the extending ear 50 restoring the lead carrier 29 and the tubular member 30 provided with ratchet teeth to operative position, as above stated, and causing the ratchet teeth 31 and 32 to be brought into engagement with the feed pawl 41 and the retaining pawl 43 thus rendering the pencil operable.

Assuming now that the lead is worn out, the operator will press the point of the pencil downwardly against a hard surface which will force the sleeve 26 upwardly, and the enlarged portion 28 will raise the feed pawl member 39 until the feed pawl 41 engages the next tooth of the ratchet teeth 31, the upper end of the tube will compress the tension spring 46 and the lead carrier 29 will telescope into the tube 30 and the plunger 36 will compress the spring 34.

When the pressure is released on the point of the pencil, the compression spring 46 will

force the feed pawl member 39 downwardly with the feed pawl 41 (which at this time has engaged the ratchet teeth 31 one tooth above the position as shown in Fig. 1) and cause one of the ratchet teeth 32 on the opposite side to be engaged by the retaining pawl 43 thus causing the tubular member 30 to be forced downwardly the distance of one tooth, and with it the plunger 36 which abuts the lead as indicated at 54 thus forcing the lead 53 outwardly of the tube 26 the length of one of the ratchet teeth. While writing, this operation may be repeated until all of the lead is used. While using the pencil, the lead as indicated at 53 abuts the plunger 36 which has the compression spring 34 as above stated, and in this construction the lead is always under a constant cushion thereby preventing the breakage of the same.

It will therefore be seen, that this invention will alleviate the present inaccurate and tedious method of adjusting the lead in a mechanical pencil and means is provided for quickly and accurately positioning the same.

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

1. In a pencil of the class described including a body providing a holder, a retaining pawl member supported concentrically thereof and provided with a retaining pawl, a feed pawl member slidably mounted in said retaining pawl member and provided with a slot through which the retaining pawl extends, a tubular member having ratchet teeth on opposite sides provided with a longitudinal slot intermediate its length, a lead carrier slidably mounted co-axially of said tubular member, a lug on said carrier extending through said slot and co-acting therewith for telescoping movement, and a feed pawl carried by the feed pawl member within said retaining pawl member, and co-acting with said ratchet teeth on one side of the ratcheted member.

2. In a pencil of the class described including a body providing a holder, a retaining pawl member supported concentrically thereof and provided with a retaining pawl, a feed pawl member slidably mounted in the retaining pawl member and provided with a longitudinal slot through which the retaining pawl extends, a tubular member having ratchet teeth on opposite sides provided with a longitudinal slot intermediate its length, a lead carrier slidably mounted coaxially of said tubular member provided with an enlarged cylindrical portion, a square portion adjacent thereto, said cylindrical portion abutting the said feed pawl member slidably mounted within said retaining pawl member, and a cylindrical sleeve provided with a square opening to engage said square portion of said lead carrier.

3. In a pencil of the class described including a body providing a holder, a retaining pawl member supported concentrically thereof, and provided with a retaining pawl, a feed pawl member slidably mounted in said retaining pawl member and provided with a slot through which the retaining pawl extends, a tubular member having ratchet teeth on opposite sides provided with a longitudinal slot intermediate its length, a spring tension provided at one end of said feed pawl member, a lead carrier mounted co-axially of said tubular member, an enlarged portion on said lead carrier abutting the free end of said slidably mounted feed pawl member.

4. In a pencil of the class described including a body providing a holder, a retaining pawl member supported concentrically thereof and provided with a retaining pawl, a feed pawl member slidably mounted in the retaining pawl member and provided with a slot through which the retaining pawl extends, a tubular member having ratchet teeth on opposite sides provided with a longitudinal slot intermediate its length, a lead carrier slidably mounted co-axially of said tubular members provided with an enlarged portion, a square portion adjacent thereto, said enlarged portion contacting with the said feed pawl member, the lead carrier extending outwardly of said holder and yieldingly mounted therein.

5. In a pencil of the class described including a body providing a holder, a retaining pawl member supported concentrically thereof and provided with a retaining pawl, a feed pawl member slidably mounted in the said retaining pawl member and provided with a slot through which the retaining pawl extends, a tubular member having ratchet teeth on opposite sides provided with a longitudinal slot intermediate its length, a lead carrier slidably mounted co-axially of said tubular member provided with an enlarged portion, a square portion adjacent thereto, said enlarged portion contacting with the said feed pawl member, the lead carrier extending outwardly of said holder, a plunger slidably and yieldingly mounted in the lead carrier with a step by step means for operating said plunger.

6. In a pencil of the class described including a body providing a holder, a retaining pawl member supported therein concentrically thereof and provided with a retaining pawl, a pair of spaced apart outwardly extending lugs, a flange on said retaining pawl member, a cylindrical sleeve mounted on one end of said holder, an internal ring fixed to said cylindrical sleeve co-acting with said flange, a lug mounted on said fixed ring for engaging the spaced lugs.

EDWIN W. WILSON.