Dec. 26, 1922. 1,440,058

A. J. COLEMAN.
LEAD PENCIL.
FILED MAR. 19, 1921.

Fig. 2

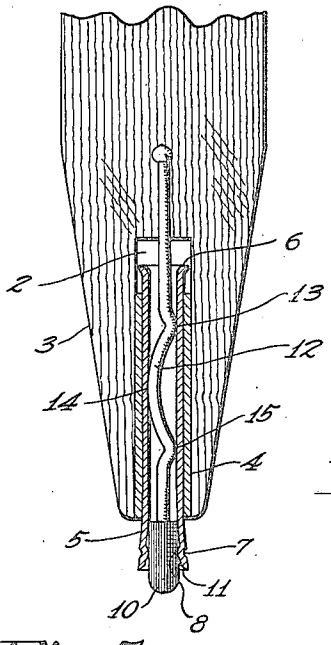


Fig. 5

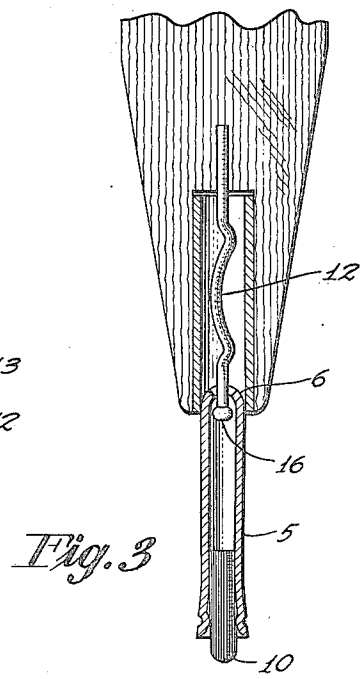


Fig. 3

Fig. 4

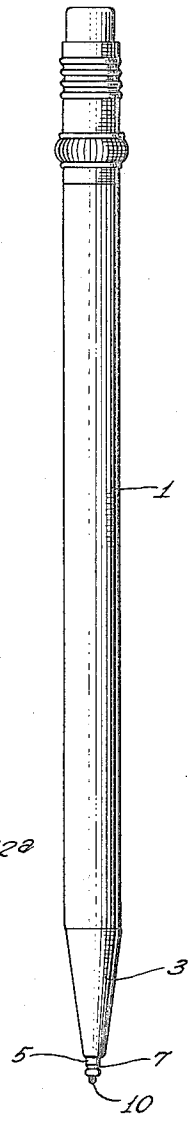
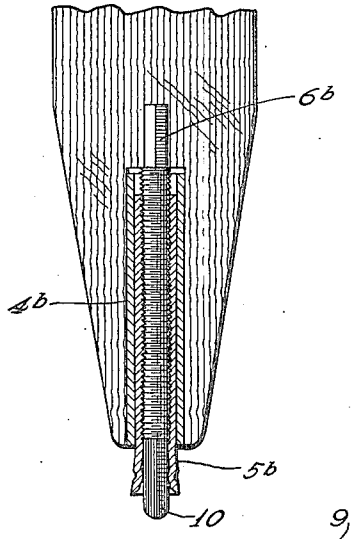
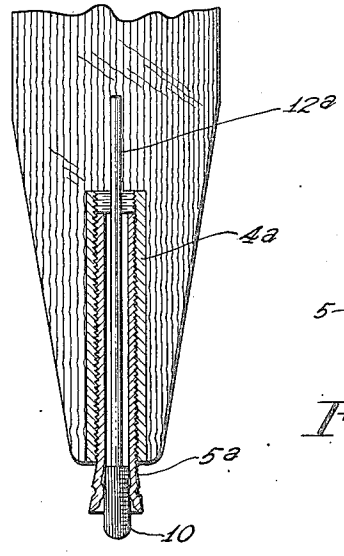


Fig. 1





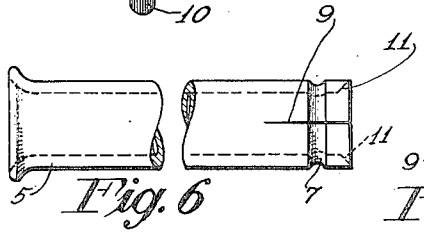


Fig. 6

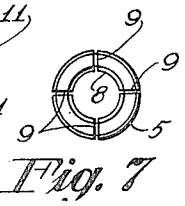


Fig. 7

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UNITED STATES PATENT OFFICE.

ALOYSIUS J. COLEMAN, OF NEW YORK, N. Y.

LEAD PENCIL.

Application filed March 19, 1921. Serial No. 453,564.

To all whom it may concern:

Be it known that I, ALOYSIUS J. COLEMAN, a citizen of the United States, residing at New York city, borough of Manhattan, in the county and State of New York, have invented a certain new and useful Lead Pencil, of which the following is a specification.

This invention is a lead pencil of that type wherein replaceable leads are employed, and the objects of the invention, speaking from a functional standpoint, are to firmly support the lead in place during the writing operation and to maintain the proper assemblage of the parts at all times.

Pencils of this general type are known to the prior art. They usually embody a wooden or metal handle in the form of a conventional lead pencil, one end of which is tapered. In the tapered end of the handle portion, a cylindrical pocket is provided and positioned coaxially of the pocket is a rigid pin or stem anchored at one end in the base of the pocket. Seated within the pocket and embracing the pin or stem is a movable sleeve, into the exterior end of which is adapted to be thrust a length of lead. The lead rests against the end of the rod so that through manipulation of the sleeve, a greater or lesser portion of the lead may be exposed to permit of its use for writing.

Pencils of this kind have never gone into extensive use, for the reason that in all prior constructions considerable difficulty has been met in retaining the movable sleeve against inadvertent slipping from the socket in which it is positioned for adjustment. In the original conception of this idea, the sleeves were mounted so as to have considerable friction with the walls of the socket, but it was found in practice that atmospheric conditions greatly affected such friction, so that at times it was practically impossible to move the sleeve, while at other times the sleeve would fall out because of absolute lack of friction, these frictional variations being caused by unequal contraction or expansion of the parts.

In a later pencil of this class, it was attempted to overcome the specified disadvantages by utilizing the fixed pin or rod to assist in holding the sleeve in position and it was suggested that if the pin, as well as the interior passage of the sleeve were covered with a coating of wax that sufficient friction would be obtained to hold the sleeve against falling out when the friction between the sleeve and walls of the pocket became insufficient to accomplish this function. This expedient helped to some extent in the solving of the problem, but after a relatively short time, it was found that the wax wore off or served to merely polish the cooperating surface so that the final result was a minimizing of friction thereby enhancing the disadvantage sought to be overcome.

In view of the foregoing consideration, pencils of the character referred to have never gone into extensive use, but have, in practice, been almost entirely superseded by pencils wherein the sliding sleeves of the character referred to have been replaced by means which exerts a positive action, usually through screw threading or the like, in the forcing of the lead into writing position. While the early conceptions embody a stationary lead and a movable sleeve, the present day pencils entirely depend on the dispensing of the movable sleeve and utilizing a movable lead.

The simplest form of construction feasible is manifestly the movable sleeve and fixed lead construction, and the object of the present invention is to so organize such a construction that it may be efficiently employed without encountering the disadvantages adverted to.

The disadvantages inherent in that type of prior art pencils wherein the lead remains stationary are entirely overcome and obviated by the present invention, which embodies a new principle of operation. In its preferred practical form, the invention comprises a movable sleeve in the outer end of which a piece of lead is adapted to be positioned and into the inner end of which projects a pin or rod which is firmly anchored in the base of the pocket in which the movable sleeve is positioned for sliding movement. The pin thus becomes a fixed pin which in practice is made resilient and bowed longitudinally so that the bowed por-

tions of the pin will function after the manner of a leaf spring operating within the movable sleeve and firmly gripping the walls thereof in tight frictional engagement, and thereby serving to hold the sleeve against inadvertent displacement from the pocket.

Features of the invention, other than those specified, will be apparent from the hereinafter detailed description and claims, when read in conjunction with the accompanying drawings.

The accompanying drawings illustrate different practical embodiments of the invention, but the constructions therein shown are to be understood as illustrative, only, and not as defining the limits of the the invention.

Figure 1 is an elevation of a pencil embodying the present invention.

Figure 2 is a central longitudinal section of the writing end of the pencil shown in Figure 1.

Figures 3, 4 and 5 are similar sections through modified forms of the invention.

Figure 6 is an enlarged elevation of a movable sleeve of the character shown in the construction of Figure 2; and,

Figure 7 is an end elevation of the movable sleeve shown in Figure 6.

Referring to the drawings, 1 designates the handle or body portion of a pencil, one end of which is provided with a pocket 2, the pocketed end of the handle being tapered at 3 to decrease its cross sectional area to better adapt it for writing purposes.

In the preferred form of the invention shown in Figures 1, 2, 6 and 7, the pocket 2 is provided with a liner 4 in the form of a fixed sleeve, which is forced into the pocket and is adapted to remain in fixed permanent position therein. Mounted for sliding movement within the fixed sleeve 4 is a movable sleeve 5. The inner end of the movable sleeve 5 is preferably flared out or flanged at 6 to increase its cross sectional area, so that it cannot be withdrawn through the fixed sleeve 4. The outer or exposed end of the movable sleeve 5 is preferably provided with an exterior annular channel 7 and an interior annular bead 8 and is further slit longitudinally from its free end to a point slightly beyond the bead and channel as shown at 9 in Figures 6 and 7. Into the outer end of the movable sleeve, a length of lead 10 is adapted to be thrust and the lead is made of such size that when forced into position under relatively slight pressure, the end portions of the sleeve 5 between the slits 9 will serve as resilient clamping jaws adapted to receive and grip the lead 10 in such manner as to retain it against inadvertent longitudinal movement relative to the sleeve 5. In order to permit of ready introduction of the lead into the sleeve 5, the end or mouth of the sleeve is preferably reamed out or tapered as shown at 11 so as to provide a wedge shaped mouth which receives the lead and guides it into the interior of the sleeve.

Extending into the sleeve from the inner end thereof is a rod 12. This rod is preferably of resilient material and is anchored in the body or handle 1 of the pencil. The rod may be conveniently anchored in the handle by driving or forcing it into the base of the pocket 2, or in any desired way so long as the rod is anchored with respect to the handle. The rod is bent, bowed or otherwise formed intermediate its ends so that that portion of the rod which extends into the movable sleeve 5 will engage with the inner surface of the sleeve at two or more points and through such engagement will be placed under tension and function after the manner of a leaf spring to exert friction upon the sleeve and thereby lock it to the rod against inadvertent longitudinal movement. In the structure shown in Figure 2, the rod is bent or bowed so that it will have a three point contact with the interior of the sleeve 5, the three points of the contact being designated 13, 14 and 15.

The resilient rod 12 thus serves as a retainer for the movable sleeve 5, but has a further important function of acting as a stop or abutment for the lead 10. In practice, the rod 12 is made of such length as to extend substantially to the end of the handle, so that when a piece of lead is forced into the end of the sleeve 5, it will seat against the end of the rod 12, which will serve to support the lead against pressure imposed upon it during writing.

In practice, the pencil may be charged by pulling out the sleeve 5 as far as possible and forcing a piece of lead into the end thereof. If the sleeve is now forced in, the lead thus introduced will engage with the end of the rod 12 and upon further movement of the sleeve, a portion of the lead may be exposed to permit of writing. As the lead is worn down by writing, the sleeve may be shifted from time to time to expose a further portion thereof until practically all the lead is used or worn away, whereupon a further piece of lead may be introduced in the manner described.

In the preferred form of the invention described, a fixed sleeve 4 is embodied and the inner end of the movable sleeve is flanged so that it is not possible to remove the movable sleeve from the pocket. However, in practice, if desired, the fixed sleeve may be entirely omitted, and the flange 6 on the movable sleeve also omitted, in which event, a movable sleeve will operate directly within the pocket and will depend entirely upon the bowed retaining rod to hold it in position. This construction has been found to give entirely satisfactory results, though

the fixed sleeve is preferred as it gives a better bearing for the movable sleeve without appreciable addition of expense.

In Figure 3 of the drawings, a modified form of construction is illustrated, wherein the rod 12 is bent or bowed in the manner hereinbefore described and functions in the same manner as referred to with reference to Figure 2, but the forward end of the rod is provided with an enlargement or stop 16 and the inner end of the movable tube 5 is provided with an inturned flange 6. The inturned flange 6 and the enlargement 16 will cooperate with one another to preclude withdrawal of the movable sleeve even though said sleeve is pulled out so far as to disengage the bowed portion of the rod from the inner surface of the movable sleeve.

In Figure 4, a further form of the invention is shown. In this embodiment, the fixed sleeve 4^a is interiorly threaded and the movable sleeve 5^a is exteriorly threaded, while the rod 12^a is made straight. In this construction, the threaded cooperation between the fixed and movable sleeves precludes inadvertent shifting of the movable sleeve and the rod 12^a merely serves as an abutment for the lead.

In Figure 5, a further embodiment of the invention is disclosed, wherein the rod 6^b is threaded and the movable sleeve 5^b is also interiorly threaded so as to screw upon the threaded rod 6^b, the latter of which is anchored in the base of the pocket against rotation. In this construction, the fixed sleeve 4^b merely serves the function of a guide for the movable sleeve, the threaded connection between the rod and the movable sleeve serving to preclude inadvertent shifting of the latter.

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

1. A lead pencil embodying a handle or body portion provided at one end with a pocket, a sleeve positioned for sliding movement within the pocket, a resilient rod anchored near the base of the pocket and extending into the sleeve to substantially the end of the body portion of the pencil, said rod being bowed or bent longitudinally to engage with the interior of the sleeve at a plurality of points and function as a spring retainer for the sleeve to normally lock the same against inadvertent longitudinal movement, whereby a length of lead thrust into the outer end of the sleeve may seat against the end of the rod and be exposed for the desired portion of its length by sliding the sleeve upon the rod.

2. A lead pencil embodying a handle provided at one end with a pocket, a sleeve mounted for slidable movement within the pocket, and a resilient member anchored with relation to the handle and adapted to exert frictional engagement with the sleeve whereby the position of the latter may be adjustably controlled.

3. A lead pencil embodying a handle provided at one end with a pocket, a sleeve mounted for slidable movement within the pocket, and a resilient member anchored with relation to the handle and extending interiorly of the sleeve to exert frictional engagement with the sleeve whereby the position of the latter may be adjustably controlled.

4. A lead pencil embodying a handle provided at one end with a pocket, a fixed sleeve seated within the pocket, a movable sleeve mounted for sliding movement within the fixed sleeve, and a resilient retainer anchored with respect to the handle of the pencil and extending into the movable sleeve, said retainer being bowed or bent laterally whereby it is adapted to frictionally engage the interior of the movable sleeve for the purpose of maintaining said sleeve against inadvertent longitudinal movement.

5. A lead pencil embodying a handle provided at one end with a pocket, a fixed sleeve positioned within the pocket, a movable sleeve mounted for sliding movement within the fixed sleeve and having its inner end flanged outwardly to overlie the inner end of the fixed sleeve for the purpose of precluding withdrawal of the movable sleeve, and a resilient retainer anchored with respect to the handle of the pencil and extending into the interior of the movable sleeve, said retainer being bent or off set laterally, whereby it is adapted to frictionally engage the movable sleeve for the purpose of precluding inadvertent movement thereof.

6. A lead pencil embodying a handle provided at one end with a pocket, a movable sleeve mounted for sliding movement within the pocket, a resilient retaining member anchored with respect to the handle of the pencil and extending into the interior of the sleeve, said resilient retaining member being bent laterally to frictionally engage with the interior of the sleeve for the purpose of precluding inadvertent longitudinal movement, of the sleeve, and means for positively precluding disengagement of the sleeve from the pocket.

7. A lead pencil embodying a handle provided at one end with a pocket, an external sleeve fixedly secured in the pocket, an internal sleeve telescoping within the fixed sleeve, a spring member anchored to the pencil handle and so fashioned as to have a three point frictional engagement with the internal sleeve, whereby it may be held in adjustable position with reference to the external sleeve.

8. A lead pencil embodying a handle provided at one end with a pocket, a pair of coaxial sleeves positioned within the pocket, the exterior of one of which sleeves is fixed with respect to the pocket and the interior of which sleeves is mounted for adjustment relative to the exterior sleeve, and a rod anchored at its inner end to the handle portion independently of the exterior sleeve, and extending into the interior of the inner sleeve to substantially the end of the handle portion.

In testimony whereof, I have signed my name to this specification.

ALOYSIUS J. COLEMAN.