Sept. 24, 1929. H. L. FISCHER 1,729,165

PENCIL

Filed Jan. 16, 1922

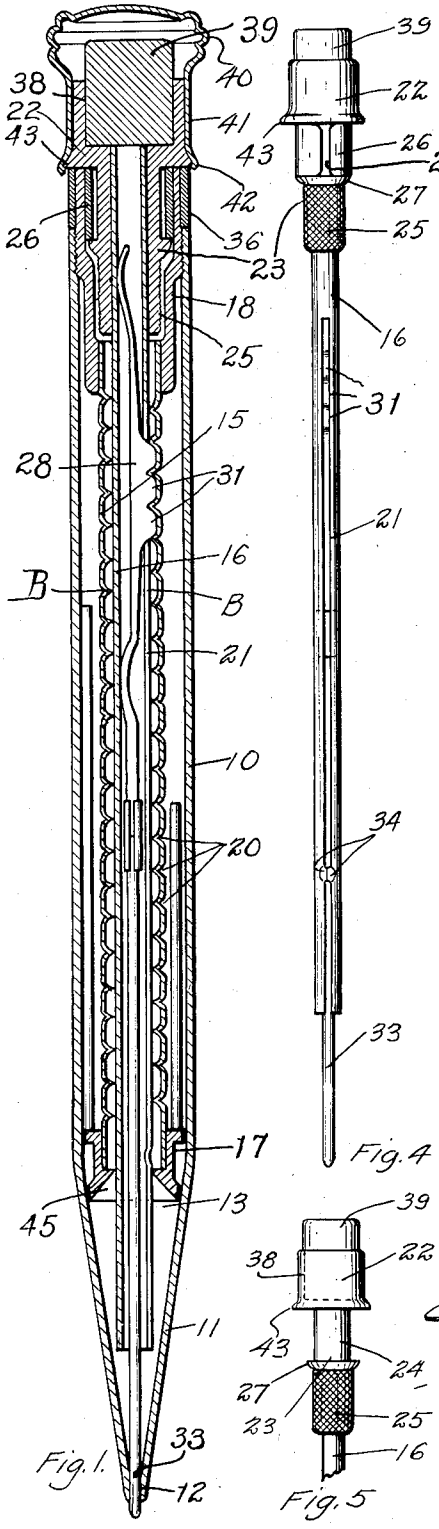


Fig. 1.

Fig. 4

Fig. 5

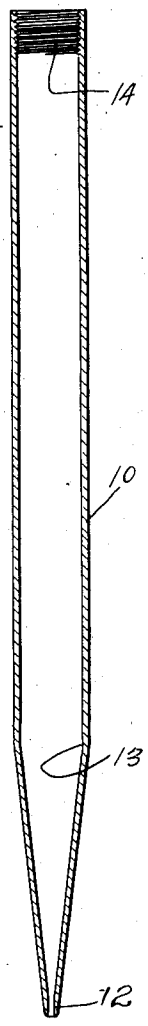


Fig. 2

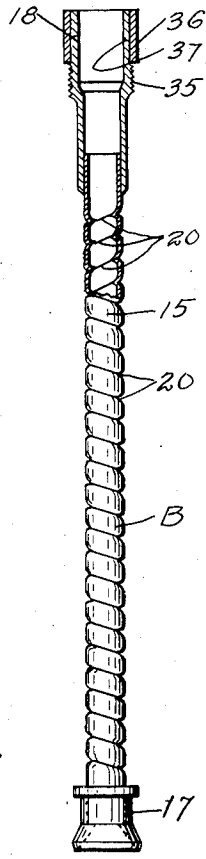


Fig. 3.

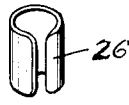


Fig. 6

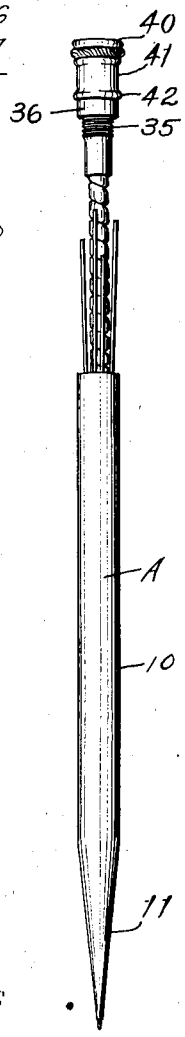


Fig. 8

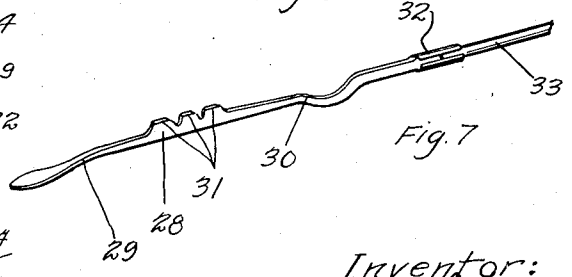


Fig. 7

Inventor:
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UNITED STATES PATENT OFFICE

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PENCIL

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My invention relates to a pencil having a simple construction and consisting primarily in a propelling means which is adapted to be contained within the pencil casing or barrel in a manner whereby the operating mechanism can be entirely removed, either collectively or selectively from the casing. The pencil is designed to use a thin marking lead of a comparatively long length and the propelling means is positioned within the casing in a manner to form an annular magazine thereabout so that the body of the propelling means and the casing together form a suitable circular compartment for extra marking leads, thus forming a magazine about the propelling mechanism, the contents of which is forced to be exposed when a portion of the propelling mechanism is withdrawn from the pencil casing, or when the propelling mechanism is removed in its entirety. The sectional lead propelling mechanism provides a construction wherein portions of the same can be replaced by new parts, or an entire new operating mechanism can be replaced in the casing, if it is desired. This feature is extremely important, particularly where gold and silver barrels are used, because the mechanism can be replaced by the dealer at any time without making it necessary to change the casing which may be of gold or silver. The invention further provides frictional compensating means between the sections of the lead propelling mechanism which provides the necessary friction to prevent free rotation of the parts in operation and which constitutes the lead carrying means in the propelling mechanism.

This invention further includes a spring sleeve lock between the operating parts of the lead propelling mechanism which allows the same to be freely operated, but prevents operation of the parts during operation and use of the pencil.

This invention also includes a particularly designed head on the center portion of the propelling mechanism which is provided with an annular shoulder to limit the longitudinal movement of the cap which conceals the rubber and also provides a roughened surface which can be engaged by the fingers when the cap is removed.

In the drawings forming a part of this specification:

Figure 1 is an enlarged longitudinal cross sectional view of the pencil.

Figure 2 is a longitudinal cross section of the pencil barrel or casing.

Figure 3 illustrates one of the sections of the lead propelling mechanism, a portion of which is broken away.

Figure 4 illustrates the other section of the lead propelling mechanism.

Figure 5 illustrates a portion of the operating head which supports the eraser.

Figure 6 is a perspective view of the spring locking sleeve removed from the head.

Figure 7 is a perspective view of the lead carrier.

Figure 8 is a perspective view of the pencil illustrating the extra marking leads in the magazine distended so that they can be engaged and removed.

The drawings illustrate the pencil A having a barrel or casing 10 formed of thin tubular material adapted to enclose the lead propelling mechanism B. The casing 10 is formed of any suitable material and is swaged to form a conical writing end 11, which is provided with a lead opening 12 in the apex of approximately the same size as the marking lead to be used in the pencil. The opening 12 is sufficiently large to allow the lead to be propelled and repelled therethrough. The inner chamber 13 of the casing 10 is of a smooth contour throughout its length, while the rear end is open and threaded at 14.

The lead propelling mechanism B is sectional and made up of the members 15 and 16. The member 15 is formed of thin tubing and is held spaced from the casing by the collar 17, which is secured to its upper end and by the closure collar 18 which is secured to the rear end.

The member 15 is provided with a thread 20 throughout the greater portion of its length and the members 17 and 18 are secured to the ends thereof in any suitable manner.

The threads 20 in the member 15 project from the inner surface of the member.

The tubular operating member 16 is formed with a longitudinal slot 21, and is provided with an operating head 22 which is formed with a projecting shank 23 having an annular recess 24 and a knurled finger engaging surface 25. The rear end of the member 16 is forced into the axial opening extending through the shank 23 of the head 22 to rigidly attach the member 16 to the head. A spring sleeve 26 of steel or other suitable material is adapted to be positioned in the recess 24 on the shank 23 between the shoulder of the head 22 and the annular shoulder 27 formed on the shank 23.

The member 16 carries the lead driver or carrier 28 which is provided with spring ends 29 and 30 and is formed with teeth 31 which project through the slot 21 to engage the threads 20 of the member 15. The spring end 30 carries a lead receiving socket 32 into which the butt end of the marking lead 33 is secured. The spring ends 29 and 30 of the lead carrier 28 hold the teeth 31 projecting out of the slot 21 and after the lead carrier 28 is inserted in the slot 21 the same is closed by the tongues 34 which are bent into position to form a stop in the slot 21, thus preventing the removal of the lead carrier 28 from the slot of the member 16.

The collar 18 is threaded exteriorly at 35 so as to engage with the threads 14 in the barrel 10 and a sleeve 36 is rigidly secured to the outer surface of the same metal as the barrel 10. If the barrel 10 is made of gold then the sleeve 36 is also of gold, or of the same material of which the barrel is made. A portion of the collar 18, which is covered by the sleeve 36, forms the engaging end of the collar so that the member 15 can be disengaged and removed from the casing 10.

A cylindrical chamber 37 is formed in the collar 18, which is adapted to receive, under spring tension, the spring sleeve 26 so as to lock the member 16 in operating position in the member 15. While the spring sleeve 26 locks the member 16 in operating position extending through the member 15, it holds the member 16 freely rotatable so that when the head 22 is rotated the teeth 31 which engage the threads 20 will cause the lead carrier 28 to move in either direction. However, the member 16 can readily be removed from the member 15 by engaging the head 22 and pulling longitudinally on the same until the spring sleeve 26 disengages from the chamber 37, after which the teeth 31 are disengaged from the threads 20 by unscrewing.

The head 22 is formed with an eraser receiving recess 38 in which the eraser 39 is secured.

The cap 40 which is provided with an oval shaped tubular shank 41 engages the circular head 22 with sufficient friction to hold the cap 40 against free disengagement from the head 22. A reinforcing bead 42 is formed about the forward end of the shank 41 which engages the annular shoulder or ridge 43 formed on the head 22 to limit the inward movement of the cap 40 on the head. This shoulder 43 prevents the cap from being jammed too tightly upon the head 22. The shank 41 of the cap 40 engages the head 22 with sufficient friction so that when a longitudinal pull is effected on the cap 40 the member 16 is withdrawn from the member 15, disengaging the spring lock 26 from the chamber 37. If it is desired to remove the cap 40 from the head 22, the member 16 is partially withdrawn and the knurled surface 25 is engaged with one hand while the cap 40 is engaged with the other to remove the cap, thus making the removal of the cap 40 from the head 22 very easy and exposing the eraser for use.

It should be borne in mind that the primary features of my pencil are the extreme simplicity of the lead propelling mechanism which virtually is composed of two main parts, namely: the threaded member 15 and the operating member 16. Further, the annular lead magazine formed by the casing and threaded member 15 is a very important part of this invention. It will be readily apparent that with this lead magazine the extra marking leads can always be exposed by disengaging the closure or collar 18 from the threads 14 and drawing the member 15 out of the casing. The simplicity of the lead propelling mechanism allows the parts to be easily interchanged, individually removed or replaced by new parts, if desired, without changing the casing.

In the operation of my pencil the marking lead 33 in use is propelled or repelled and the mechanism is protected against jamming in the writing end 11 by the releasable lead carrier 28, the teeth 31 of which readily disengage from the threads 20 by ratcheting over the same when a sharp blow or more than writing pressure is exerted while the pencil is held straight up and down against the projecting end of the marking lead 33. This construction projects the simple lead propelling mechanism and prevents jamming or breaking of the same.

The collar 17 has a projecting end which is formed with a conical inner surface 45. If at any time the marking lead 33 should be broken, accidentally, and the broken particles or crumbs collect in the conical end 11 by removing the operating member 16 and holding the pencil point up, the conical surface 45 will cause the particles to be readily discharged out of the pencil through the threaded member 15. In this manner the conical surface 45 functions to clean the barrel of any crumbs or broken particles of lead which might be collected in the conical end and thus keeps the point of the pencil free of any ob-

structions and also prevents jamming of the same.

Heretofore mechanical pencils have been very apt to get out of order on account of jamming or clogging in the writing tip and my invention entirely overcomes this undesirable feature.

I claim:

1. A pencil comprising an enclosing casing, a sectional lead propelling mechanism, including a tubular threaded member, a tubular operating member adapted to extend through said threaded member, a head secured to said operating member, a shank formed on said head, a recess in said shank, a spring sleeve rotatably held in said recess and a closure member secured to said threaded member having a chamber adapted to receive said sleeve, under spring tension, to lock the members of said propelling mechanism together.

2. A mechanical pencil, comprising a sectional tubular lead propelling means, an operating head on one of the members of said propelling means, a spring sleeve carried by said operating head, a chambered member carried by the other member of said propelling means adapted to receive said spring sleeve under tension to hold the parts of said propelling means against free longitudinal separation, but freely rotatable.

3. A pencil including a lead propelling means, an operating head on said means, an eraser recess within said head, a shoulder formed on said head and a cap adapted to engage said shoulder and concealing said eraser recess and shoulder.

4. A mechanical pencil having a casing, a separable lead propelling mechanism adapted to be contained in said casing, said propelling mechanism being composed of two main operating parts, a locking means carried by one of said parts adapted to fit into the other of said parts to hold the same rotatable and against free longitudinal separation, the member carrying said locking means having an eraser recess, a cap adapted to cover said recess and member and a shoulder adapted to limit the longitudinal movement of said cap on said member.

5. A mechanical pencil having a casing, a separable lead propelling mechanism adapted to be contained in said casing, said propelling mechanism comprising two main parts, a locking means carried by one of said parts adapted to fit into the other of said parts to hold the parts against free separation, an eraser recess in the member carrying said locking means, a cap for covering said recess, and a finger engaging piece formed on the member having the eraser recess, whereby engagement of the said finger piece allows a firm grip to hold the member while said cap is removed to expose the eraser.

6. A pencil comprising a casing, a tubular threaded member, a closure head secured to said tubular member adapted to fix said tubular member in said casing in a manner to form a lead magazine thereabout, a slotted operating member adapted to extend through said threaded member, an operating head secured to said slotted member, an eraser recess formed in said head, a shank formed on said head, an annular recess formed in said shank, a finger engaging portion adjacent said recess and a spring sleeve, said annular recess being adapted to receive said spring sleeve which is adapted to engage in said closure head of said threaded member to hold the operating member freely rotatable in said threaded member.

7. A pencil comprising a propelling mechanism formed of separable sections, a magazine closure head secured to one section, and an operating head secured to the other section, said operating head having means formed thereon adapted to carry a spring sleeve, a finger engaging portion formed on said head, an eraser recess formed in said head, and a cap for covering said recess, said finger engaging portion providing a firm gripping means, while said cap is removed to expose the eraser.

8. A pencil having a casing, a separable lead propelling mechanism formed of sections, a magazine closure secured to one of said sections, an operating head secured to the other of said sections, an eraser recess formed in said operating head, a cap for said head, an annular shoulder formed on said head adapted to be concealed by the annular forward edge of said cap and to limit the inner position of said cap to facilitate the easy removal of said cap from said head.

9. A mechanical pencil, including a casing, a lead propelling mechanism formed of separable sections, one of said sections forming an annular magazine with said casing, an operating head secured to the other section, a cap adapted to cover the exposed portion of said head, a shank formed integral with said head, a recess formed in said shank, a spring locking member adapted to be positioned in said recess and a knurled finger engaging portion formed on said shank.

10. A sectional mechanical pencil, including an operating head, a removable cap for said operating head, an annular shoulder formed on said head adapted to engage and be concealed by said cap, a resilient locking member carried by said head, said head being secured to one of the members of the pencil, a collar carried by another of the sections of the pencil and a recess in said collar adapted to receive said resilient locking member to hold the same against rotation, allowing the free rotation of the operating parts of the pencil.

11. A pencil including a casing, a separable lead propelling means, comprising an operat-

ing member and a tubular threaded member, said operating member adapted to extend through said threaded member, means for separably locking said members together and collar means secured to the forward end of said threaded member shaped to cause any particles of broken lead to be readily discharged out of the pencil when the same is held point upward and the said operating member is removed.

12. A pencil including a separable lead propelling means and collar means associated with said propelling means shaped to cause particles of broken lead to be discharged from said pencil when a portion of said propelling mechanism is withdrawn and the point of the pencil is held in an upward direction.

13. A pencil including a barrel, a lead propelling means in said barrel, an operating head on said propelling means, an annular shoulder formed about said head, an eraser recess within said head and a cap engaging said shoulder and concealing said eraser recess, shoulder and joint between said head and said barrel.

14. A pencil having a barrel, a propelling means in said barrel, an operating head on said propelling means projecting from said barrel, a shoulder formed on said head and a cap adapted to engage said shoulder and cover said shoulder and the joint between said head and said barrel.

HOWARD L. FISCHER.