

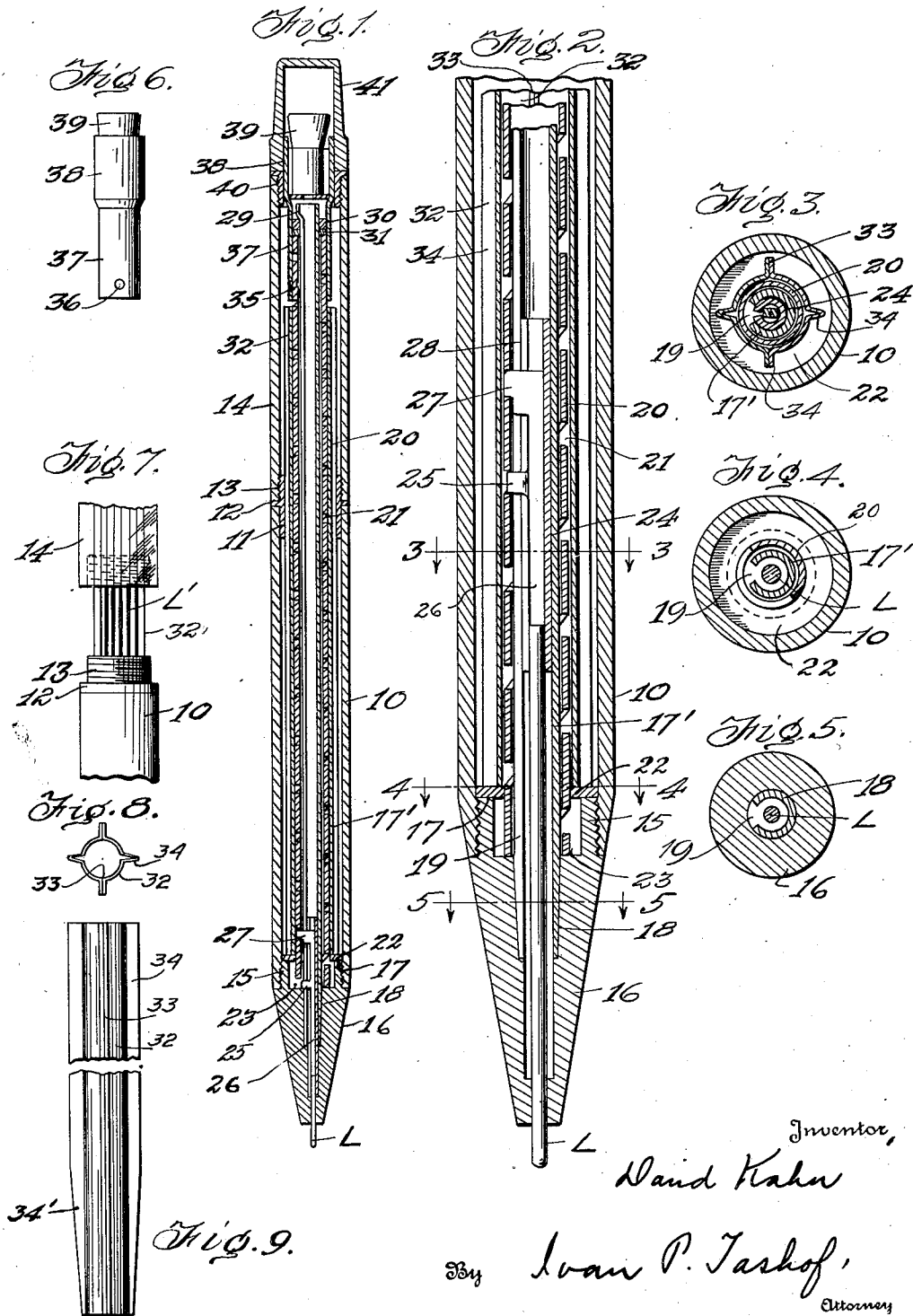
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MECHANICAL MAGAZINE PENCIL

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## MECHANICAL MAGAZINE PENCIL

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21 Claims. (Cl. 120—18)

This invention relates to mechanical pencils of the type wherein a lead may be protracted from and retracted into the point or tip of the pencil.

More particularly, the invention relates to improvements in the pencils disclosed in the applications of David Kahn filed, respectively, on August 20, 1935, and September 24, 1938, bearing respective Serial Numbers 37,089 and 231,584.

In pencils of this character, as shown in the application bearing the Serial No. 37,089, above referred to, provision is sometimes made for storing long leads in an annular space provided between the barrel and the working mechanism by which the lead is protracted and retracted. Heretofore, the upper and lower parts of such barrels have been made of like material such as metal, Celluloid or a suitable condensation or other plastic material, the entire barrel being opaque so that the enclosed leads could not be observed.

This is objectionable since it is impossible to determine, under such conditions, whether a desired number of leads are stored in the barrel.

It is one important object of the present invention to provide a pencil of this character wherein at least one portion of the barrel will be either transparent or sufficiently translucent to permit observation of the leads in the lead storage space.

In pencils of this character as hitherto manufactured, it has been customary to form the tip of metal and fit it into the barrel. For reasons of construction and operation, it is desirable that an annular space be left within the upper part of the tip around the operative mechanism. In such pencils the lower ends of the stored leads rest on a narrow ledge formed by the upper end of the metal tip and small pieces of such leads are apt to break off, drop into this annular space and jam or choke the operative mechanism.

It is a second important object of this invention to provide a lead supporting ledge for the upper end of the annular space of the tip member, said ledge being so arranged that the leads may rest thereon without possibility of broken portions dropping into the said space.

A third important object of the invention is to provide a lead moving mechanism having a novel arrangement of actuating means fitted on the rear end of said lead moving mechanism.

A fourth important object of the invention is to provide a novel arrangement of closure fitted within the rear end of the barrel around said actuating means whereby the contained leads are prevented from escaping.

A fifth important object of the invention is to

provide a pencil of this character which may be separated into upper and lower sections for the removal of a lead and loading with leads without removal of such closure means.

A sixth important object of the invention is to provide a reinforcing and anti-chipping ferrule for the joint of the barrel of such pencils.

With the above and other objects in view, as will be presently apparent, the invention consists in general of certain novel details of construction and combinations of parts hereinafter fully described, illustrated in the accompanying drawing and particularly pointed out in the claims.

In the accompanying drawing like characters of reference indicate like parts in the several views, and—

Figure 1 is a longitudinal section taken diametrically through a pencil constructed in accordance with this invention;

Figure 2 is a similar section showing the lower end of the pencil to an enlarged scale and with certain of the working parts in somewhat different positions from the showing in Figure 1;

Figure 3 is a section on the line 3—3 of Figure 2;

Figure 4 is a section on the line 4—4 of Figure 2;

Figure 5 is a section on the line 5—5 of Figure 2;

Figure 6 is a side elevation of a removable rubber holder used herewith and forming part of the closure means for the upper end of the barrel;

Figure 7 is a fragmentary view showing proximal portions of the upper and lower barrel sections in separated positions;

Figure 8 is a plan view of the magazine tube to an enlarged scale; and

Figure 9 is a side elevation thereof partly broken away.

In the embodiment of the invention here shown there is provided a lower shell section 10 which may be formed of any desired material and, while it is preferable that the section 10 be formed of some plastic or moldable material; such as Celluloid, a phenol condensation product, pyroxylin, cellulose acetate or other such material, this material may also be of metallic nature. Fixedly fitted in the upper end of this lower section 10 is a ferrule 11 preferably of metal, and this ferrule is fitted in the section 10 in such manner that the ferrule and section 10 preferably form a unitary structure. The manner of fitting the ferrule in place is optionable so long as the attachment is substantially permanent. This fer-

rule projects above the section 10 and is provided externally with a rib or flange 12 which fits tightly on the upper edge of the section 10. Above this the ferrule is provided with external threads 13 on which is removably screwed the upper section 14 of the tubular barrel. This upper section is made of some material which is either transparent or translucent enough to show the interior of the upper part of the barrel. Obviously, this arrangement of a lower opaque part and an upper translucent part may be reversed or, for the purposes of this invention, both parts may be of the transparent or translucent character above set forth.

In the lower end of the member 10 is screwed, preferably by a left hand screw, the tubular neck 15 of a conical tip 16. Thus this tubular neck provides a shoulder 17 just above the lower end of the lower section 10.

The operative mechanism is somewhat similar to the corresponding mechanisms in the patents above referred to. That is, there is provided a runner tube 17' which is fixedly secured in the tip 16 by any suitable means, as by a tapered end 18, and this runner tube is provided throughout its length with a longitudinal slot 19. Exteriorly, of this runner tube is mounted an actuating tube 20 having a spiral groove or slot 21 formed therein. On top of the shoulder 17 is a washer 22 which fits externally closely within the barrel section 10 and internally around the actuating tube 20 so that the space 23 within the neck 15, between said neck and the tube 17', is tightly closed. This washer, as will be presently explained, supports the lower ends of the leads and prevents particles therefrom entering the space 23. Slidable within the runner tube 17' is a lead carrier tube 24 wherefrom projects lug means 25 engaging in the actuating tube 20 so that, as the tube 20 is rotated in one direction or the other, the lead L is projected from or retracted into the tip 16. Within the tube 24 is a rod 26 constituting an expeller element and this rod bears against the upper end of the lead L and is provided with a lug 27 which projects through a slot 28 formed in the tube 17' and enters the slot 21 normally at the distance of one pitch of the spiral slot above the engagement of the lug 25 therein. The upper end of the tube 24 is expanded, as at 29, to fit over and hold a washer 30 below which is an antifriction washer 31 which engages the upper end of the spirally slotted actuating tube and holds it from longitudinal movement on the runner tube.

Fitted over the spiral actuating tube is a magazine tube 32 which is preferably split as at 33 for convenience of manufacture, and is provided with ribs 34, tapering at their lower ends as at 34'. This tube, when the parts are assembled, fits closely within the ferrule 11 but, as shown in Figure 3, has its ribs somewhat spaced from the barrel above and below this ferrule.

On the upper end of the tube 17' there is provided a slight boss 35 which engages in an opening 36 formed in the lower part of an operating tube 37 provided with an enlarged upper end 38 adapted to receive a rubber or eraser 39. This member forms part of the closure means at the upper end of the barrel. The remainder of such closure means is formed by a sleeve 40 screwed into the upper end of the barrel and which fits rather closely on the part 38. A cap is fitted frictionally and removably on the exterior of the part 38.

As shown in Figure 7, when the barrel sections

10 and 14 are unscrewed the reserve leads L' are exposed. Upon removal of the cap, these sections may be separated and the section 14 drawn off of the leads so that the latter may be removed. Otherwise, the pencil operates by turning the cap to project or retract the lead L as in former pencils.

It is to be observed that the metal ferrule between the upper and lower barrel sections not only strengthens the barrel at this point but the flange 12 protects the proximal ends of the sections from chipping.

There has thus been provided a simple and efficient device of the kind described and for the purposes specified.

It is obvious that changes may be made in the form and construction of the invention without departing from the material principles involved. It is not, therefore, desired to confine the invention to the exact form herein shown and described but it is desired to include all such as come within the scope of the appended claims.

The present application is a continuation in part of application Serial Number 37,089, filed August 20, 1935, said application being a continuation in part of application Serial Number 733,524, filed July 2, 1934.

The anti-friction washer herein disclosed, is claimed in applicant's co-pending application Serial Number 172,245 filed November 1, 1937, said application being a continuation in part of application Serial Number 733,524 filed July 2, 1934.

What is claimed, is:

1. In an article of the class described, a barrel consisting of an upper and a lower part, at least one of said barrel parts being of a thermoplastic material prone to chipping, a metal ferrule fitted within one of said parts and projecting therefrom, said ferrule protecting the parts from chipping, means for detachably engaging the other part of said barrel to the projecting part of said ferrule, said barrel having at least one part sufficiently transparent for observation of the interior, and means spaced from the barrel and located therewithin to contain writing material observable through the said part of the barrel, the upper portion thereof being of a substantial length so as to permit easy removal of exposed writing material when the upper barrel portion is removed.

2. A pencil of the character described comprising a barrel, a lead-moving mechanism located in said barrel and rotative therein, said lead-moving mechanism being spaced from the inner surface of the barrel whereby an annular lead-storing chamber is provided between the lead-moving mechanism and the barrel, an actuating member engaging the lead-moving mechanism and extending out of the rear end of the barrel for manual engagement and rotation, a closure member surrounding the actuating member and mounted freely thereon and preventing movement thereof longitudinally of the barrel, said closure member having means for removably engaging the rear end of the barrel.

3. A pencil of the character described comprising, a barrel, a lead-moving mechanism located in said barrel and rotative therein, an actuating member fitted over the lead-moving mechanism and engaging the same to rotate it, a closure member having means for removably engaging the rear end of the barrel, said closure member being freely rotatable on the actuating member but preventing movement of the actuating mem-

ber longitudinally of the barrel, the actuating member having a part extending beyond the closure member for manual engagement and rotation to rotate the lead-moving mechanism.

4. A pencil of the character described comprising, a barrel, a lead-moving mechanism located within said barrel and rotative therein, said lead-moving mechanism being spaced from the inner surface of the barrel whereby an annular lead-storing chamber is provided between the lead-moving mechanism and the barrel, a grooved lead-holder non-rotatively located in said chamber and extending for substantially the greater portion of the length of the barrel, an actuating member fitted over the lead-moving mechanism and extending out of the rear end of the barrel for manual engagement; and means for preventing movement of the actuating member longitudinally of the barrel while permitting rotative movement thereof, said means comprising a closure member threaded into the rear end of the barrel and surrounding the actuating member.

5. A pencil of the character described comprising, a tubular barrel, lead-moving mechanism located in said barrel and rotative therein, said mechanism including a spiral member centrally positioned within the barrel and extending there-through for the greater portion of the length of the barrel, said spiral member being spaced from the inner surface of the barrel whereby an annular lead-storing chamber is provided between said spiral member and the barrel, an elongated grooved tubular lead-separator surrounding the spiral member and situated in the lead-storing chamber, a closure member for the rear end of the barrel comprising a plug portion threaded into the end of the barrel and a rotatable part secured to and rotatable within the plug portion, said rotatable part having a portion extending into the barrel within the lead separator and engaging the spiral member, said rotatable part also having a portion projecting beyond the end of the barrel for manual engagement and rotation.

6. A pencil of the character described comprising, a tubular barrel, lead-moving mechanism located in said barrel and rotative therein, said mechanism including a spiral member extending through the barrel for the greater portion of the length of the barrel, said spiral member being spaced from the inner surface of the barrel whereby an annular lead-storing chamber is provided between said spiral member and the barrel, an elongated grooved tubular lead-separator substantially as long as the spiral member surrounding the spiral member and situated in the lead-storing chamber, a closure member for the rear end of the barrel comprising a plug portion threaded into the end of the barrel and a rotatable part secured in and rotatable within the plug portion, said rotatable part having a tubular portion extending into the barrel within the lead separator and fitting over the end portion of the spiral member, said rotatable part also having an eraser-holding part projecting beyond the end of the barrel for manual rotation.

7. In a pencil of the character described, a barrel, a closure member for the rear end of the same comprising a threaded plug, a bushing rotatably mounted within said plug and held against axial movement therein, said bushing projecting beyond the end of the barrel and provided with an eraser holding recess, and a sleeve portion on said bushing projecting into the barrel and provided with means for effecting a de-

tachable engagement with the lead-propelling means located therein.

8. In a pencil of the character described, a barrel, lead-propelling means located within the barrel, a closure member threaded into the rear end of the barrel, an actuating member rotatably mounted within the closure member, and means on one end of the actuating member and located within the barrel for coupling with the lead-propelling means to rotate the same upon manual rotation of the actuating member.

9. In a pencil of the character described, a barrel, a grooved lead-separator of tubular formation non-rotatively held within the barrel, a lead-propelling mechanism extending through the lead-separator and rotatable within the same, a closure plug removably fitted into the rear end of the barrel, and an actuating member rotatably mounted in the closure plug and having a part extending into the barrel and removably fitted on the lead-propelling mechanism within the lead-separator.

10. In an article of the class described, a barrel consisting of an upper and a lower part, a ferrule fitted within one of said parts and projecting therefrom, means for detachably engaging the other part of said barrel to the projecting part of said ferrule, and means spaced from the barrel and located therewithin to contain writing material, the upper part of said barrel being of a substantial length so as to permit easy removal of exposed writing material when the upper barrel part is detached from the lower part.

11. In a pencil of the character described, a barrel consisting of an upper and lower part, means to removably connect the upper and lower parts of said barrel, lead propelling means located within the barrel, a closure member in the rear end of the upper barrel part, an actuating member rotatably mounted within the closure member and means on one end of the actuating member and located within the barrel for coupling with the lead propelling means to rotate the same upon manual rotation of the actuating member.

12. In a pencil of the character described, a barrel consisting of an upper and lower part, means to removably connect the upper and lower parts of said barrel, said barrel having at least one part sufficiently transparent for observation of the interior, lead propelling means located within the barrel, a closure member in the rear end of the upper barrel part, an actuating member rotatably mounted within the closure member and means on one end of the actuating member for coupling with the lead propelling means to rotate the same upon manual rotation of the actuating member.

13. In a pencil of the character described, a barrel consisting of an upper and lower part, means to removably connect the upper and lower parts of said barrel, said barrel having at least one part sufficiently transparent for observation of the interior, a grooved lead separator of tubular formation within said barrel, a lead propelling mechanism extending through the lead separator and rotatable within the same, a closure plug fitted into the rear end of the barrel, and an actuating member rotatably mounted in the closure plug and having a part extending into the barrel and fitted on the lead propelling mechanism within the lead separator.

14. In a pencil of the character described, a barrel consisting of an upper and lower part, a ferrule fitted within one of said parts and pro-

jecting therefrom, means for detachably engaging the other part of said barrel to the projecting part of said ferrule, said barrel having at least one part sufficiently transparent for observation of the interior, lead propelling means located within the barrel, a closure member in the rear end of the barrel, an actuating member rotatably mounted within the closure member, and means on one end of the actuating member and located within the barrel for coupling with the lead propelling means to rotate the same upon manual rotation of the actuating member.

15. In a pencil of the character described, a barrel consisting of an upper and lower part, a ferrule fitted within one of said parts and projecting therefrom, means for detachably engaging the other part of said barrel to the projecting part of the ferrule, a lead separator in said barrel and forming therewith an annular lead storage chamber, said barrel having at least one part sufficiently transparent for observation of the leads present in said separator, lead propelling means located within the barrel, a closure member fitted in the rear end of the barrel, an actuating member rotatably mounted within the closure member and means on one end of the actuating member and located within the barrel for coupling with the lead propelling means to rotate the same upon manual rotation of the actuating member.

16. In a pencil of the character described, a barrel consisting of an upper and lower part, a ferrule fitted within one of said parts and projecting therefrom, means for detachably engaging the other part of said barrel to the projecting part of said ferrule, a lead separator within said barrel and forming therewith an annular lead storage chamber, said barrel having at least one part sufficiently transparent for observation of leads present in the storage chamber, lead propelling means within the barrel, a washer fitted adjacent the lower end of the barrel between the barrel and the lead propelling means to support the lower ends of the leads, a closure member in the rear end of the barrel, an actuating member rotatably mounted within the closure member, and means on one end of the actuating member for coupling with the lead propelling means to rotate the same upon manual rotation of the actuating member.

17. In a pencil of the character described, a barrel, lead propelling means located within the barrel, a closure member fitted into the rear end of the barrel, an actuating member rotatably mounted within the closure member, and means on one end of the actuating member for coupling with the lead propelling means to rotate the same upon manual rotation of the actuating member.

18. In an article of the class described, a writing material-containing magazine, a barrel about said magazine consisting of an upper and a lower part, at least one of said barrel parts being of a thermo-plastic material prone to chipping, a metal ferrule fitted within one of said parts and projecting therefrom, said ferrule protecting the parts from chipping, and means for detachably engaging the other part of said barrel to the projecting part of said ferrule, one of said barrel portions being of a substantial length so as to permit easy removal of exposed writing material when said barrel part is detached.

19. In an article of the class described, a lead-containing magazine, a barrel consisting of an upper and a lower part, at least one of said barrel parts being of a thermoplastic material prone to chipping, a metal ferrule fitted within one of said parts and projecting therefrom, said ferrule protecting the parts from chipping, means for detachably engaging the other part of said barrel to the projecting part of said ferrule and a flange on the exterior of said ferrule separating the upper and lower parts of said barrel, the upper part of said barrel being of a substantial length so as to permit easy removal of exposed leads when the upper barrel portion is detached and removed from the lower barrel portion.

20. In a pencil of the character described, a barrel consisting of an upper and a lower part made of a plastic material prone to chipping, a ferrule fitted within the end of one of said parts, projecting therefrom, and detachably engaging the end of the other part of said barrel to strengthen and protect the ends from chipping, lead propelling means in said barrel, a closure member in the rear of the upper barrel, an actuating member rotatably mounted within the closure member and means on one end of the actuating member and located within the barrel for coupling with the lead propelling means to rotate the same upon manual rotation of the actuating member.

21. In a pencil of the character described, a barrel consisting of an upper and a lower part made of a plastic material prone to chipping, a ferrule fitted within the end of one of said parts projecting therefrom and detachably engaging the end of the other part of said barrel to strengthen and protect the ends from chipping, lead propelling means in said barrel, a metal ferrule fitted in the rear end of the upper barrel, an actuating member rotatably mounted within said metal ferrule, and means on one end of the actuating member and located within the barrel for coupling with the lead propelling means to rotate the same from manual rotation of the actuating member.

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