Feb. 23, 1926. 1,574,457

J. C. WAHL

MECHANICAL PENCIL

Filed March 5, 1921

Fig. 1

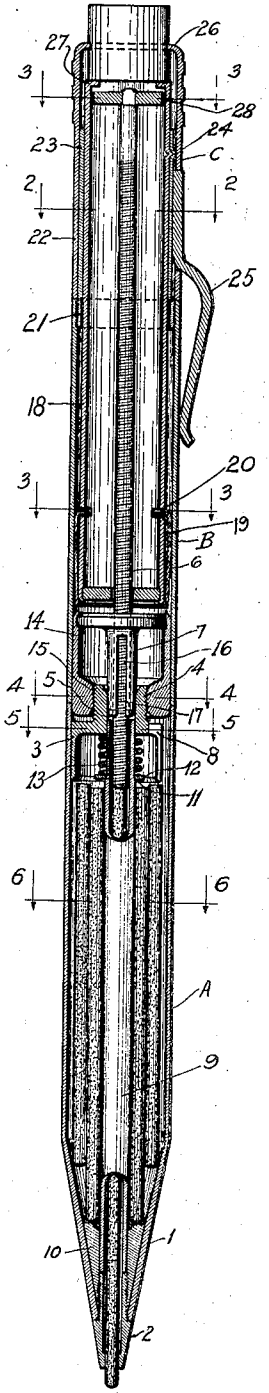


Fig. 2

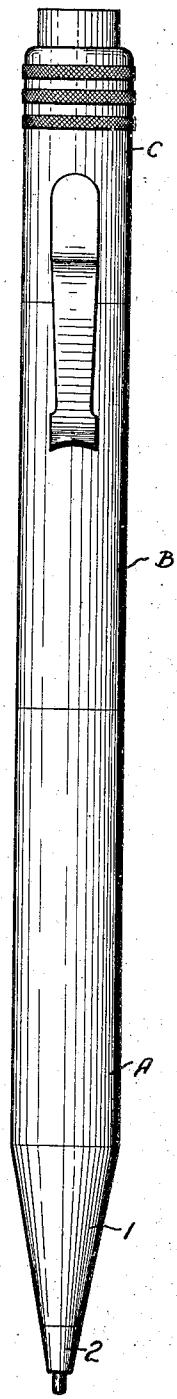


Fig. 3

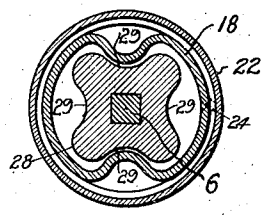


Fig. 4

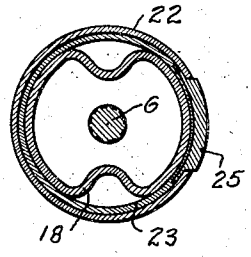


Fig. 5

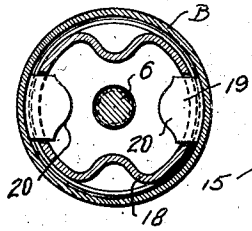


Fig. 6

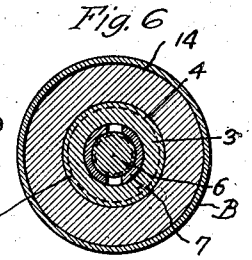


Fig. 7

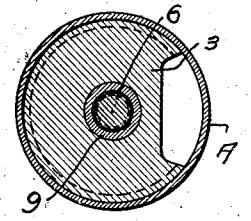


Fig. 8

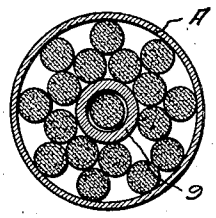


Fig. 9

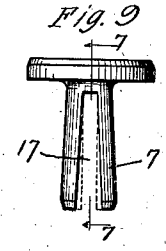


Fig. 10

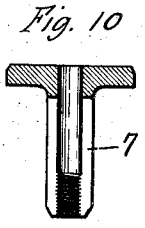
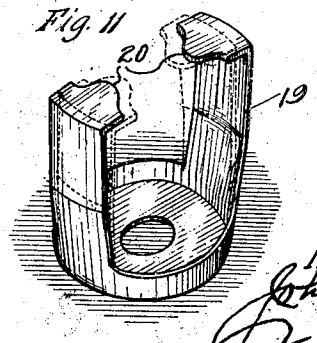


Fig. 11



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Patented Feb. 23, 1926. 1,574,457

UNITED STATES PATENT OFFICE.

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MECHANICAL PENCIL.

Application filed March 5, 1921. Serial No. 449,804.

To all whom it may concern:

Be it known that I, JOHN C. WAHL, a citizen of the United States, and a resident of the city of Chicago, county of Cook, and State of Illinois, have invented certain new and useful Improvements in Mechanical Pencils, of which the following is a specification.

This invention relates to mechanical pencils, and has special reference to pencils wherein the lead is engagingly held to prevent its dislodgment from the pencil, and wherein controlled follower means are employed to force the lead to exposure for writing.

This present invention has special reference to structural means to effect the housing of a plurality of lead sections and a relation of structural parts in a manner that will render said housing member readily accessible to the user; to means for locking the tip portion in connection with the body of the pencil; to the manner of relating casing sections of the pencil to facilitate relative longitudinal adjustment thereof under resilient tension; and especially has reference to a means for operatively relating a follower section to the pencil that will permit the follower rod to move freely by gravity into contact with the lead in a lead guide and thereafter to be engaged for the purpose of controlling its movement with respect to the lead section in the lead guide.

In developing the present invention, I have had in mind structures wherein the follower rod has been permanently related to threadlike members which when operated, to expel the lead are screwed down to a maximum expelling position, and then to re-lead, must re-traverse the entire length of the threaded support in an unscrewing action, thereby entailing a considerable expenditure of time and convenience, whereas in the present structure I obviate this disadvantage by normally supporting the follower rod in a manner that will permit its free gravity movement to contact with the lead, and when in such contact it is adapted to be engaged and the rod advanced by screw action or otherwise to feed the lead to exposure, and then when the lead is exhausted the rod is freed from such engagement and may be readily withdrawn, or by turning the pencil section supporting it in the proper position, will gravitate to its initial high position when a lead is then inserted and may be again adjusted by gravity action into contact with the new lead.

Other objects will appear hereinafter.

The invention consists in the combinations and arrangements of parts hereinafter described and claimed.

The invention will be best understood by reference to the accompanying drawings forming a part of this specification, and in which,

Fig. 1 is a longitudinal sectional view illustrating the assembled working parts.

Fig. 2 is a plan view giving the general appearance of the pencil when assembled.

Fig. 3 is a cross sectional view along the line 3—3 of Fig. 1.

Fig. 4 is a cross sectional view along the line 4—4 of Fig. 1.

Fig. 5 is a cross sectional view along the line 5—5 of Fig. 1.

Fig. 6 is a cross sectional view along the line 6—6 of Fig. 1.

Fig. 7 is a cross sectional view along the line 7—7 of Fig. 1.

Fig. 8 is a cross sectional view along the line 8—8 of Fig. 1.

Fig. 9 is a plan view of the feed wire clutch showing its jaws in an extended position.

Fig. 10 is a cross sectional view along the line 7—7 of Fig. 9, and

Fig. 11 is a plan view of the friction shell 19 in Fig. 1.

The pencil which is to be hereafter described, is divided into three tubular sections, the lower part to be hereafter known as section A, the central part as section B, and the top as C. Section A of said structure is swaged as at 1 which forms a small aperture in its lower extremity for the reception of the rifled tip 2, which is clearly described in Patent 1,151,016, granted to Charles R. Keeran August 24th, 1915. Fixedly attached within the upper aperture of the section A is a shell 3 having extending therefrom an externally threaded projection 4 having a longitudinally extending passageway 5 which permits the entrance and exodus of a threaded follower rod 6 and the lower portion of the threaded follower rod

clutch 7. An opening 8 is provided whereby the leads may be inserted into the lower section which thus acts as a magazine for extra leads. The upper shoulder of the projection 4, formed by drilling out the passageway 5, is beveled in order to facilitate the easy entrace of the correspondingly beveled jaws of the threaded follower rod clutch 7. Fixedly mounted in the swaged end of section A, and forming seats for the tip 2 and a lead guide 9, is a metallic member 10 which is threaded internally to receive the threaded shoulders of the aforementioned tip, and is beveled at its upper end to facilitate the entrance of the aforementioned lead guide 9.

As may be clearly seen in the drawings, the upper portion of the lead guide 9 is adapted to be inserted into the passageway in the shell 3, thus holding it (the lead guide) firmly in position. Encircling the lead guide 9 and bearing upon the shoulder 11, formed therein, is a washer 12 and surrounding said lead guide and bearing against the inner side of the shell 3, is a compression spring 13. This compression spring bearing against the washer 12 causes the lead guide to be firmly pressed against the top of the tip 2, thus having a lock washer effect which prevents the tip 2 from becoming unloosened from the member 10 without the exertion of quite a little force.

Fixedly mounted within the lower end of section B is a shell 14 having a threaded aperture 15 which is adapted to receive the threaded projection 4 of section A, and fixedly mounted within the upper edges of said shell is the aforementioned threaded follower rod clutch or feed control member 7. The threaded follower rod clutch 7 has a passageway 16 which is threaded at its lower extremity as is illustrated in Fig. 10, and is slotted as at 17 to form spring jaws.

Fixedly mounted in section C and extending into section B is an upper shell 18 having corrugations stamped therein to form recesses for projections on the guide lug 28 which is mounted on the threaded follower rod 6. This shell 18 is prevented from being entirely withdrawn from section B by means of a frictional clip 19. Said frictional clip 19 has a laterally extending finger on each extension which are adapted to engage in slots in the lower portion of the shell 18 as illustrated at 20. The clip 19 is formed of spring steel and when forced into the barrel the extensions thereof will bear firmly against the inner walls of said barrel, thus causing the shell 18 to be held firmly within the casing B.

Mounted in the upper opening of section B is a ring 21, the lower shoulder of which is adapted to act as a stop for the outstanding finger of the clip 19, thus, though section C may be pulled away from section B, its outward motion is limited by the heretofore mentioned fingers coming in contact with the ring 21.

Mounted between, and fixedly attached to both the shell 18 and the outer wall 22 of section C, is a shell 23 which is adapted to lock said shell 18 and section C together. A further lock is formed by means of stamping indentations 24 in shells 23 and 18 before their being assembled into section C. Thus upon revolving section C, the shell 18 will likewise be caused to revolve.

A clip 25, such as described in Patent No. 1,279,186 granted to John C. Wahl and William H. Odlum under date of September 17, 1918, is fitted into an aperture in the wall of section C and soldered to the shell 23.

The upper edge of section C is inturned as at 26 to form an eraser grip. An eraser seat is formed by the inturned flange 27 formed on the upper part of the shell 18. An eraser when mounted on the flange 27 will be firmly held in position by means of the inturned shoulder as illustrated at 26.

Guide lug 28 having recesses 29 stamped therein, is fixedly attached to the upper end of the threaded feed wire 6, and said recesses are adapted to ride over ribs formed by the indentations in the shell 18. Thus, it may be clearly seen, that upon revolving the shell 18, the guide lug 28 and the threaded follower rod 6 will be caused to revolve.

The operation of my device is as follows: When it is necessary to reload the pencil, section A is unscrewed from section B and inasmuch as the spring jaws of the threaded follower rod clutch 7 extending into the passageway of the threaded projection of section A, they will be released and the threaded follower rod will be permitted to move freely up and down within said clutch. A lead is introduced through the passageway 5 into the lead guide 9. Next, the loosely mounted threaded follower rod is introduced into said lead guide 9 until it comes in contact with the lead, whereupon the projection 4 is screwed into the shell 14. This action causes the jaws of the internally threaded clutch 7 to grip or engage the threaded follower rod, whereupon the follower rod cannot be advanced or repelled without a revolution of section C.

As may be clearly seen, the tedious reloading operation, which is present in practically all of the modern mechanical pencils, is done away with and after reloading the user has only to revolve the lead feeding mechanism two or three turns to project the lead.

While I have illustrated and described the preferred form of construction for carrying my invention into effect, this is capable of variation and modification without departing from the spirit of the inventon.

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

1. In a pencil, a casing; means for feeding the lead through the casing comprising a threaded follower rod; a threaded feed control member normally in disengagement of the rod to permit free gravity movement thereof; means for actuating said control member for effecting engagement with the rod to control the movement of the latter; and means for advancing or retracting said rod under engagement of the control member.

2. In a pencil, a two-part casing; means for feeding the lead through the casing comprising a follower rod; a feed control member normally in disengagement of the rod; means operable in the joining of the two-part casing for actuating said control member for effecting engagement with the rod to control the movement of the latter; and means for advancing or retracting said rod under engagement of the control member.

3. In a pencil, separable tubular sections; a lead guide in one section; a follower rod communicating with the lead guide; control means supported in the associated section normally in disengagement with said rod, but operable through the joining of said sections to effect engagement therewith; and means for advancing or retracting said rod under engagement of the control means.

4. In a pencil, separable housing sections; a lead guide in one section; a threaded follower rod communicating with the lead guide; threaded control means supported in the associated section normally in disengagement with said rod to permit free gravity action of the latter into contact relation with the lead, but operable through the joining of said sections to effect engagement between the control member and the rod; and means for turning the rod under such control to cause it to be advanced or retracted.

5. In a pencil, a two-part casing; means for feeding the lead through the casing comprising a follower rod; a control member normally related to the follower rod for support but permitting free longitudinal movement thereof, whereby the latter will automatically gravitate into contact with the lead within the lead guide; means co-operating with the control member in the act of joining the two-part casing to cause it to engage the follower rod; and means for advancing or retracting the latter under engagement of the control member.

6. In a pencil, a two-part casing; means for feeding the lead through the casing comprising a follower rod; a control member normally related to the follower rod for guiding and supporting it but permitting free longitudinal movement thereof, whereby the latter will automatically gravitate into contact with the lead within the lead guide; means cooperating with the control member in the action of joining the two-part casing to cause it to engage the follower rod; and means for advancing or retracting the latter under engagement of the control member.

7. In a pencil, a casing section; a lead guide therein; an extension casing; a follower rod therein adapted for projection into the lead guide; an apertured union member in the lower section; a union member in the extension section including a guide and control member for the follower rod; said control member adapted for projection and compression within the aperture of the union member in the lower section when said sections are joined, whereby engagement of the follower rod is effected; and means for advancing or retracting the follower rod under such control.

8. In a pencil, a casing member, an apertured filler member in the lower end thereof provided with a threaded portion; an apertured tip for union with the filler member and juncture with the lower end of the casing; a tensioning member within the casing having bearing relation with the upper edge of the tip member; and resilient means suitably supported within the casing and related to the tension member to cause it to apply pressure upon the tip member.

9. In a pencil, a casing member; an apertured filler member in the lower end thereof with a threaded portion; an apertured tip for union with the filler member and juncture with the lower end of the casing, an apertured lead guide within the casing in contact with the tip; a resilient member and means for relating said resilient member to the lead guide to apply thrust pressure thereto.

10. In a pencil, a casing member; an interior shell member longitudinally adjustable therein; a stop member at the upper end of said shell interposed between said casing and shell member and a resilient spacing member interposed between said casing and shell member to maintain said members in the desired relation and to provide a limited frictional resistance against the longitudinal movement of the shell member with relation to the casing; suitable lead supporting means in said casing; and means for advancing said lead longitudinally of the pencil.

11. In a pencil, in combination, a casing; a shell member projecting within the casing; means for relative spacing of the casing and shell including means for limiting the extent of movement of the shell within the casing and for applying limited frictional resistance against the longitudinal movement of the shell member with re-

lation to the casing; suitable lead supporting means in said casing; and means for advancing said lead longitudinally of the pencil.

12. In a pencil, in combination, a casing; a shell member projecting within the casing; related means for relative spacing of the casing and shell including means for limiting the extent of movement of the shell within the casing and for applying limited frictional resistance against longitudinal movement of the shell member with relation to the casing; suitable lead supporting means in said casing; and means for advancing said lead longitudinally of the pencil.

13. In a pencil, an outer casing provided with an apertured tip portion at its lower end; a lead guide communicating with the aperture in said tip; a follower member for communicating with the lead guide; a longitudinally adjustable member within the casing and spaced therefrom; means for effecting such relative spacing including means for limiting the extent of movement of the adjustable member with relation to the casing, and for applying limited frictional resistance against such longitudinal movement; and means for advancing or retracting the follower member.

14. In a pencil, a casing provided with an apertured tip portion at its lower end; a lead guide communicating with the aperture in said tip; a follower member communicating with said lead guide; means for normally centering and guiding said follower member to allow free longitudinal movement thereof that it may gravitate into or out of contact relation with the lead section in the lead guide and including means for engaging said rod when in contact relation with the lead; means for effecting such engagement of the rod; and means for advancing when so engaged.

15. In a pencil, a casing provided with an apertured tip portion at its lower end; a lead guide communicating with the aperture in said tip; a threaded follower member communicating with said lead guide; a member provided with a threaded portion for guiding said follower member, the latter normally in disengagement thereof; means for effecting engagement of the threaded portion of the guide member with the follower member; and means for turning the follower rod when in such engagement to cause it to be advanced or retracted as desired.

16. In a pencil, separable tubular sections; a lead guide in one section; a threaded follower rod communicating with the lead guide; feeding means for the follower rod normally in disengagement therewith but operable through the action of joining the tubular sections to form a feeding union; and means for advancing the feed rod to cause it to apply pressure to the lead in the feed tube.

17. In a pencile, separable tubular sections; a lead guide in one section; a follower rod communicating with the lead guide, feeding means for the feed or follower rod normally in disengagement therewith but operable through the action of joining the tubular sections to form a feeding union, and means for advancing the feed rod to cause it to apply pressure to the lead in the feed tube.

18. In a pencil, separable tubular sections; a lead guide in one section; a follower rod communicating with the lead guide; a feeding member for the follower rod, normally in disengagement therewith, but operable, through the action in joining the tubular sections to form a feeding union; and means for the feed or follower rod to cause it to apply pressure to the lead in the feed tube.

19. In a pencil, a two-part housing shell, a lead guide therein, a follower rod; feeding means for advancing the follower rod normally in disengagement therewith; means to effect engagement between said means and the follower rod co-acting in the joining of the two-part shell.

20. In a pencil, a casing through which a lead is designed to be projected, a feed rod; feeding means for advancing or retracting the feed rod normally in disengagement with the latter to permit normal free movement thereof; means operable at option to effect engagement between said feeding means and rod; and related means to effect a turning of the feed means to cause the rod to follow the lead or to be withdrawn for spacing therefrom.

21. In a pencil, a two part casing joining means therebetween; a follower rod adapted for projection to advance the lead; a control member associated with the rod, normally in disengagement therewith, but operable through the act of joining the casing sections for causing engagement therebetween for controlling the movement of the rod; and means for actuating the control member.

22. In a pencil, a casing; means for feeding the lead through the casing including a threaded follower rod; a threaded control member normally in disengagement of the rod to facilitate gravity advance and retraction thereof, but operable for engagement therewith for controlling its movement; and means for actuating the control member for effecting such engagement with the rod to control the movement of the latter.

23. In a pencil, in combination, a two-part casing; a lead guide therein, a follower rod communicating with said lead guide; means for supporting and guiding said follower rod to permit its free gravity advance into contact with the lead in said lead guide; and

means co-acting with the means for supporting and guiding the follower rod and operable through the joining of the two-part casing for causing engagement of the supporting and guiding means with the follower rod for relative co-action in effecting advancement of the follower rod.

24. In a pencil, in combination, a casing for supporting a lead section; a shiftable follower rod for feeding said lead section; means for normally supporting and guiding said follower rod to permit its free gravity advance into contact with said lead section; and means for causing engagement between said supporting means and the shiftable follower rod to promote the advancing of the lead through the shifting of the follower rod.

25. In a pencil, in combination, a casing for supporting a lead section; a follower rod for co-operating with said lead section; means for supporting said follower rod to permit its free rotation and gravity advance into contact with said lead section, means for causing engagement between said supporting means and follower rod for feeding the lead by means of the rotation of the follower rod.

26. In a pencil, a two-part casing adapted to support a lead section in a manner to permit it to be projected externally thereof; a follower member adapted for projection in lineal contact with the lead; means for normally supporting and guiding said follower member to allow free longitudinal movement thereof that it may gravitate into or out of contact with the lead section and including means active through the joining of the two-part casing for engaging said rod when in contact relation with the lead; and means for advancing the rod.

27. In a pencil, in combination, a casing comprising a first section for supporting a lead, a second section detachably connected to said first section to permit the introduction of a lead into said casing, a follower rod for cooperation with said lead, means for supporting said follower rod to permit its free movement into contact with said lead, means actuated by the connection of said sections for causing engagement between said supporting means and the follower rod for feeding the lead by means of the advance of the follower rod.

In witness whereof I have hereunto subscribed my name.

JOHN C. WAHL.