

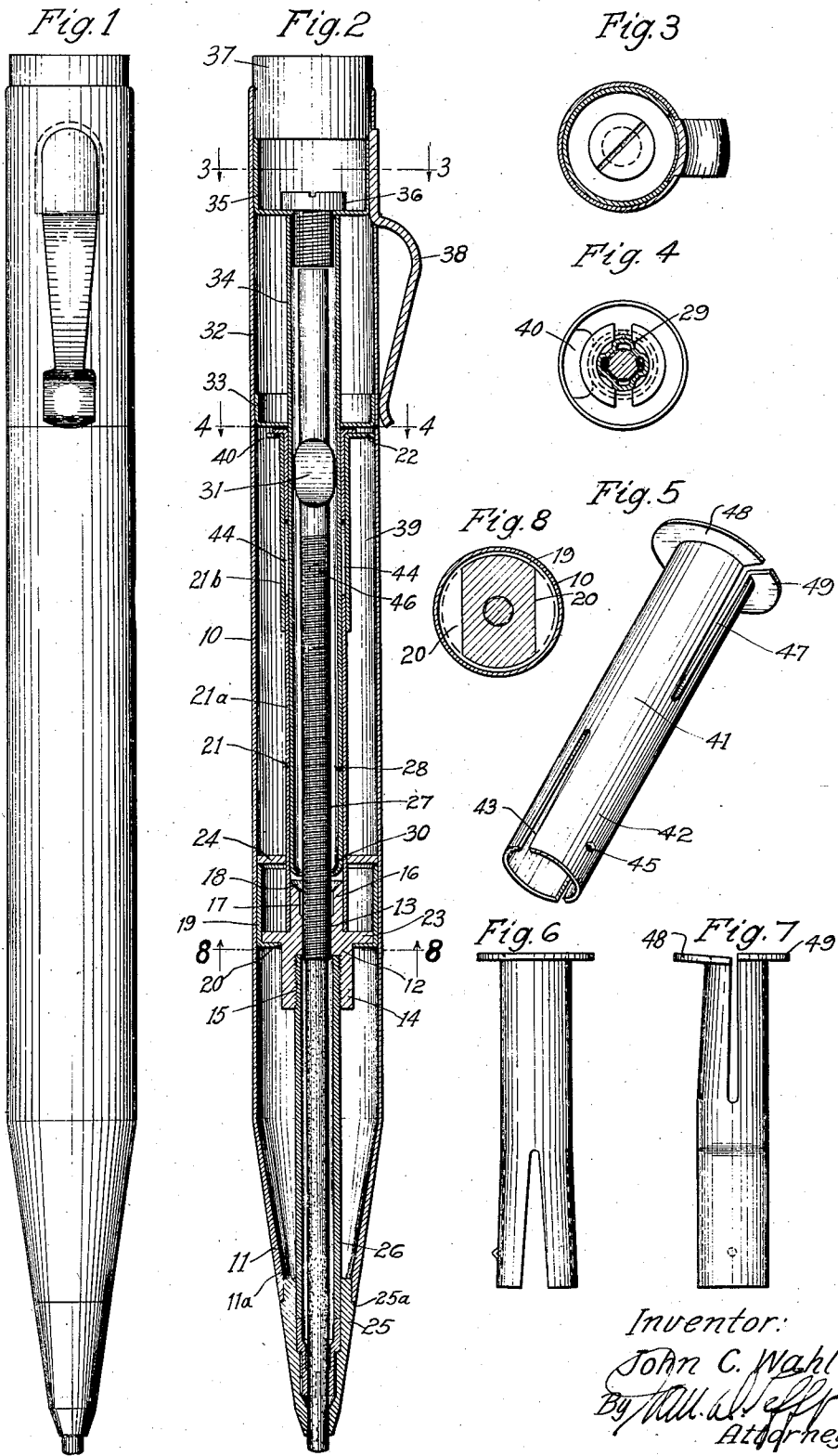
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J. C. WAHL

PENCIL

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## UNITED STATES PATENT OFFICE.

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## PENCIL.

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*To all whom it may concern:*

Be it known that JOHN C. WAHL, citizen of the United States of America, residing at Chicago, in the county of Cook and State of Illinois, has invented certain new and useful Improvements in Pencils, of which the following is a specification.

My invention relates to pencils.

It has special reference to a pencil equipped with a lead propelling mechanism interiorly of its body and operable by means exteriorly thereof for advancing the lead into exposed position.

The object of the invention is to improve upon structures of the general class above described that are now in use and to that end the invention is directed to details of improvement that serve for the betterment of pencils now on the market.

Essential to the pencil structure is the provision of a plunger or lead propelling member operable within the main body of the pencil and means for advancing or retracting said lead propeller and one of the objects of the invention is to so co-relate the lead propeller and the actuating means therefor that they are relatively longitudinally adjustable by the user, without relative rotation, when assembled for operation and under gravity force when disconnected from the main body, thus relieving the operator from the necessity of extending or retracting by screw action, as in the present methods employed.

In the practical art of pencils of the above described class a main body or shell is employed and in conjunction therewith a head or closure member is employed. In this art various means have been provided to relate the head to the main body in a manner that will permit detachment for a relative spacing therebetween. One of the objects of the invention is to provide a special and improved means for relating the main body and head for closure that includes friction tension therebetween to accomplish the union as distinguished from a threaded-union of the head with the main body, thereby simplifying construction and reducing cost of production.

In the practical art compartments for holding extra leads have been provided, by so relating parts of the pencil structure as form such receiving compartments. In the main, closures for such compartments have

been effected by the association of a detachable head or cap with the main body of the pencil. In the present structure, the main body or shell and the head are associated for relative longitudinal spacing under tension of their parts and if a closure for the opening in the lead magazine depends upon the placement of the head in juxtaposition with the main pencil body, the spacing of the parts would permit leads to fall out unless special closure provision for the lead compartment were provided. One of the objects of the invention is to provide a closure for the lead compartment, independent of the head member, the same being operable to effect closure through entry, in the usual course of assembling the pencil parts, of a member attached to the head into the pencil casing, and operable by a withdrawal of said member to effect an opening thereof.

Another object of the invention relates to a method of assembling the parts of the pencil to attain the utmost of simplicity, durability and efficiency; the new and improved results growing out of such method hereinafter to be especially detailed.

Referring to the drawings: Figure 1 is a plan view showing the pencil with parts in complete assembly.

Figure 2 is a vertical sectional view longitudinally through the center of the pencil.

Figure 3 is a cross sectional view on the line 3—3 of Figure 2.

Figure 4 is a cross sectional view on the line 4—4 of Figure 2.

Figure 5 is a perspective view showing a shell member adapted to be applied to an interior shell or housing member, whereby, through resiliency of its members, the said shell is firmly held in its desired position in connection with the assembly of pencil parts and also co-operates with the extra lead compartment for closure or opening of the same under certain conditions of association or disassociation of parts of the pencil.

Figure 6 is a plan view of the same shell as shown in Figure 5 indicating deflection of parts of the shell.

Figure 7 is the same shell shown in Figure 6 but viewed from a right angle position and illustrates an applied deflection of a portion of its body for purposes hereinafter to be fully described.

Figure 8 is a cross sectional view on the line 8—8 of Figure 2.

Referring to the drawings: 10 is a main shell or body terminating at its forward ends with the gradually reduced portion 11; 11<sup>a</sup> indicating an interior taper in the end of the reduced portion provides co-operation with the tip portion to effect a slip joint closure there between. 12 is a union member provided with a centrally disposed threaded way 13. A forwardly extended part 14 of the union member is of larger diametered bore than that of threaded opening 13, which is interiorly threaded as at 15. A rearwardly extended part 16 of the union member 12 is provided with an open way 17 slightly larger than the general opening 13 there through: also the outer extremity of the rearward extension 16 is tapered as at 18 to facilitate, in conjunction with the expanded opening 16 therein, the entry of a lead propelling member into the threaded way 13.

A shell 19 is fixed to the interior of casing 10 and is provided with stop lugs 20 thereon (see Figure 8) to facilitate relative placement of union member 12 in conjunction therewith to form inter-lock therebetween against rotation of said union member and to further co-operate with the union member, a lead guide and tip to effect a firm union of the specified parts in conjunction with the casing when the parts are completely assembled.

21 refers generally to a tubular member adapted to be disposed centrally within the main casing comprising tubular sections 21<sup>a</sup> and 21<sup>b</sup>, respectively, of the differing dimensions shown and fixed together at their overlapping portions, the same being provided with the flange 22. Tube 21 is of a length sufficient that when disposed within the main casing its forward end is in abutment with the flange member 23 of the union member 12 and its rear end in cross sectional alignment with the rear end of said main casing. Tube 21 is fixed to the rearward extension 16 of the union member and is provided with the spacing collar 24 fixed thereto. Tube 21 and union member 12 being thus united constitute a unit structure that is designed to be inserted within casing 10.

25 refers generally to a tip, the rearward end thereof being shouldered at 25<sup>a</sup> for abutment with tube 10, and reduced in size as at 25<sup>b</sup> to facilitate entry into tapered portion 11 of said casing.

26 is a lead guide designed to be fixed to the tip, its rear end being threaded for purposes of screw connection with the forward extension 14 of union member 12.

In assembling, the tubular member 21 and the attached union member 12 are inserted in the main casing, with the flange member 23, in abutment with stop members 20, the lead guide is entered through the tip end of

the casing and is screwed into the extension portion 14 of the union member 12, the length of the lead guide being such that when the shouldered portion of the tip is in abutment with the forward end of the casing the union member will have been drawn into close contact with the shouldered members 20 on casing 10, thereby forming a connected unit comprising the tube 21, union member 12, and lead guide 26 and in effecting such union of parts the complete unit is firmly fixed within the casing.

27 refers, generally, to a lead-propelling member, the same being threaded throughout a portion of its length and is designed to co-operate with union member 12 for purposes of projection or retraction within the lead guide when properly manipulated. 28 is a shell or housing member provided as an operating support and guide for the lead-propelling member, its function being to house the lead propeller in a manner to facilitate its reciprocation, either by gravity or through the pull of the union member therein and to also so engage the lead propeller that when it is rotated within tube 21 it will cause the lead propeller to be turned for the purpose of being advanced or retracted within the union member 12. through the co-operation of their respective threaded portions. Shell 28 is formed with longitudinal corrugations 29, extending throughout the portion of its length that lies within the main casing 10 when inserted therein, as shown in Figure 2, and may be inturned at its forward end as at 30, for the purpose of closure against complete dislodgment of the lead propelling member and the rear end 34 of said shell (that extends beyond the rearward limits of the main casing) is preferably round in form, as shown in said figure. The lead propelling member may be flattened or expanded as at 31 to provide somewhat extended lug projections from the sides thereof for purposes of engagement and co-operation with certain of the channelways formed by the corrugations in the shell member 28, thereby providing a support and guide for the lead propeller within the shell member that will facilitate its ready movement longitudinally therein and also the turning of the lead propeller with the shell.

A head member is provided, one of the purposes of which is to form a connecting support for the shell member another being to provide a suitable closure from the rearward end of the main casing 10, and for the still further purpose of providing a support for a rubber eraser and also it may serve as an attachment base or support for a clip member.

The head member, above referred to, includes in its structure a tubular member 32, of the same diameter as the main casing 10.

To the forward end of the tube is fixed the flanged closure member 33, provided with a central perforation of diameter approximating that of the portion 34, of shell 28.

Shell member 35, is fixed within the tubular member 32, and is provided with a central threaded opening to facilitate co-operation with screw member 36. In practice that portion 34 of shell member 28, that normally extends beyond the forward end of the main casing 10, when the pencil is assembled as a unit, is inserted through the opening in closure member 33, and suitably fixed thereto and its rear end similarly fixed to shell member 35, thereby providing a substantial unit comprising the head and shell member. The screw member 36, is provided for closure of the entry-way for the lead propelling means within the supporting shell.

The extreme rear end of casing 32 of the head may be intumed for the purpose of engaging eraser member 37, said eraser member, when inserted, being seated upon the rear end portion of shell 35.

38 is a clip of a well known type that is designed to be entered within a longitudinal slot (not shown) in the head member 32, the same having flanged projections for bearing against the marginal interior edge of said slot. In practice, clip 38, having been properly positioned, as shown in Figure 2, is fixed and held in that position in connection with the insertion and fixing of shell 35 within tubular member 32.

It will be observed that in the union of the parts of the pencil as disclosed in Figure 2, that a chambered portion 39 is developed; said chamber being housed laterally by the walls of casing 10 and tube 21 and at its ends, respectively, by the spacing collar 24 at its forward end and the flange, 22, of casing 21, at its rear end. This chamber is designed to be utilized for housing extra leads and to that end an opening, as 40 (see Figures 2 and 4), is provided by cutting away a portion of the flange member 22, thereby permitting the entry of lead sections.

I have herein provided a special means for closure of the extra lead compartment that has special utility in connection with pencils of the class herein exemplified, wherein no means is contemplated or provided for fixing the head to the main body of the pencil and wherein relative spacing apart of these elements is of such common occurrence that if the head were depended upon for a closure for the chamber, inconvenience would be experienced, from dislodgment of lead sections. To obviate this difficulty and to provide means independent of the head for closure of this chamber, I have provided a short tubular member 41, which is especially formed for use with its forward end 42 slotted, as at 43, and deflected slightly outwardly beyond its normal

diameter, whereby, when the tube is inserted within the portion 21<sup>b</sup> of the tube 21, it will be tensioned against the wall of said tube section and may be interlocked therewith through and by means of the lug 45 thereon engaging a perforation, or indent, 46 in said tubular portion 21<sup>b</sup>. The rearward portion of tube 21 is similarly slotted as at 47, but at right angles to slots 43, the forward ends of the sections, formed by so slotting the tube, being flanged as at 48 and 49. In practice one of said sections (see 48 in Fig. 7), is designed to be inwardly deflected, as shown in said figure; thereby reducing the normal interior diameter of the tube so that when said tube is inserted in its place in the pencil, with its flanged portions overlying flange 22 of tube section 21<sup>b</sup>, (the shell member 28 not having been entered into tube 21) the flange 48 thereon will be sufficiently spaced from the wall of the main casing to permit leads within chamber 39 to be dislodged from the chamber. But the act of entering shell 28 into shell 41 will cause an outward deflection of section 48 sufficient to effect a closure of opening 40 in the extra lead chamber to prevent dislodgment of lead sections. From the foregoing description it will be seen that only by a complete separation of shell member 28 from its housing in tubes 21 and shell 41, is it possible that lead sections may be removed from the chamber, thus obviating the difficulty that would result from dislodgment of lead sections through the very common, and unconscious, practice of users of relative spacing of the head and main sections apart.

Special attention is called to the method of assembly of pencil parts herein employed, which comprehends the co-relating into a single unit the main casing, the tubular housing for the operating member, the lead guide and the tip. This result is accomplished by the entry of the units composing respectively the union member and tube and the lead guide and tip at opposite sides of the lug on the casing and screwing them together to form a compact unit. The value of this method of uniting pencil parts not only resides in the resulting simplicity but also provides a simple means of separating the parts for purposes of repair.

What I claim is:

1. In a pencil, in combination, a casing, a stop and feed member stationary with respect to the casing, a tip member and a lead propelling member connected with the stop and feed member for assembling purposes and for advancing or retracting the lead propeller.

2. In a pencil, in combination, a casing, a stop and feed member stationary with respect to the casing, a tip member, a lead propelling member connected with the stop and feed member for assembling purposes and for ad-

vancing or retracting the lead propeller, and means for turning the lead propeller.

3. In a pencil, in combination, a casing, a lead propelling member therein, a feed mechanism for the lead propelling member fixed to the casing, actuating means co-related to the lead propelling member in a manner to effect rotation thereof and to permit limited relative longitudinal movement between said members either under the influence of gravity or the co-operating action of the feed member with the lead propelling member, including a longitudinally grooved sleeve and threaded lead propeller fashioned with members for engaging the grooves in said sleeve.

4. In a pencil, in combination, a casing, a shoulder member thereon, a union member disposed rearwardly of the shoulder, a unit comprising a tip and a lead guide disposed forwardly of the shoulder, said unit provided with a part fashioned for joiner and take-up relation with the union member.

5. In a pencil, in combination, a casing, provided with a shoulder member thereon, a union member disposed rearward of said shoulder, a tubular member connected therewith and extending rearwardly thereof, a unit comprising a tip, and a lead guide disposed forwardly of said shoulder having a part fashioned for take-up union with said union member, whereby when the parts specified are joined, tensioned relations therebetween will be established to produce a substantially integral unit.

6. In a pencil in combination, a casing, provided with a shoulder member intermediate its ends, a union member disposed rearwardly of said shoulder and fashioned for interlock therewith against rotation within the casing, said union member being internally threaded and provided at its rear portion with a guide channel, a tubular member connected with the union member and communicating with the guideway therein, a lead guide connected with the forward end of said union member, a lead propelling member threaded for co-operation with the threaded way in the union member, an operating member for said lead propelling member adapted for insertion into the tubular member and fashioned for housing and engagement of the lead propelling member to cause its rotation therewith and permit it to reciprocate longitudinally thereof, and a head member connected with said operating member to facilitate the turning and reciprocation thereof within the tubular member and for closure of the rearward end of said pencil.

7. In a pencil, in combination, a casing, a stop member therein, a unit comprising an internally threaded union member and a tubular member, a unit comprising a tip and a lead guide adapted for connection and take-up relation with the union and tubular member and for stop relation with the end

of the casing, whereby, through such connection, the two units respectively may be drawn into tensioned relation with the stop member and the casing.

8. In a pencil, in combination, a casing provided with an interiorly disposed stop member intermediate its ends, a union member removably disposed therein fashioned for abutment with the stop member and also for co-relation therewith to prevent rotation within the casing, a tubular member connected with one end of the union member, a unit comprising a lead guide and a tip adapted for connection and take-up relation with the other end of the union member the tip member thereof fashioned for abutment with the end of the tubular member when such take-up relation is established, whereby the several parts specified are firmly united to form a compact unit.

9. In a pencil, in combination, a casing provided with a stop member therein, a union member provided with a threaded opening at one end, a guide-way at the other end and with an intermediate feed-way therein, a tube connected with the rear end of the union member extending to the rearward limits of the casing, a tip adapted for connection and closure with the forward end of the casing, a lead guide fixed to said tip and fashioned at its rear end for joiner and take-up relation with the union member.

10. In a pencil, in combination, a casing, a union member therein provided with a threaded way, a lead propelling member threaded for co-operation with the threaded way in said union member, a housing and operating member for the lead propelling member fashioned for co-operation with the lead propelling member to cause it to be rotated therewith and to permit its free longitudinal movements therein, a head member attached to the housing and operating member, a tubular member for supporting the housing and operating member, and means for supporting said housing to permit it to be rotated.

11. In a pencil, in combination, a casing, a tubular member fixed therein, a lead propelling member, a housing therefor rotatable within the tubular member and fashioned for engagement with said lead propelling member to cause it to be rotated therewith but permitting free longitudinal movement of the latter therein, tensioning means between the tubular member and the propelling housing, means for rotating said housing and means fixed within the casing for co-operation with the lead propelling member to cause the latter to be advanced or retracted within the casing.

12. In a pencil, in combination, a casing, a tubular member therein spaced from the casing, a closure member at the rear end of the casing overlying said space and provided

with an opening therein, a closure member spaced from and in advance thereof, whereby an extra lead chamber is formed, a resilient member fashioned to effect closure of the exit-way from the extra lead chamber secured within the tubular member, its normal position being in deflected position with relation to said opening and means adapted for entry into the tubular member and for actuation of the resilient closure member to close the entry opening to the lead chamber.

13. In a pencil, in combination, a casing, a tubular member therein spaced from the casing, spaced closure members arranged relative to said case and tube to form an extra lead chamber, one of said closure members being provided with an opening, a resilient member fashioned to effect closure of said opening secured within the tubular member, its normal position being in deflected position with relation to said opening, a lead propelling member and housing therefor the latter adapted for insertion within the tubular member and for co-operation through such insertion with the resilient member to cause expansion thereof to close the opening in the extra lead chamber.

14. In a pencil, in combination, a casing, a tubular member therein and spaced therefrom, closure members associated therewith adapted to form an extra lead chamber, one disposed, approximately at the rear extremity of the casing and the other spaced forwardly therefrom, the former being provided with an exit opening communicating with the chamber, a closure member related to the opening into the chamber in a manner normally in clearance thereof but operable to effect closure, a head member and means connected therewith, adapted through entry into the body of the pencil to actuate the last named closure member to close the opening into the extra lead chamber.

15. In a pencil, in combination, a casing provided with an extra lead chamber therein having an entry opening thereinto, closure means for the opening into the extra lead chamber, comprising a shell member, disposed within the forward portion of the extra lead chamber and formed with a resilient flanged member lying normally in clearance of said opening, a head member and means associated therewith adapted for entry into said shell whereby the resilient member of said shell will be laterally deflected to effect closure of said opening.

16. In a pencil, in combination, a casing

provided with an extra lead chamber therein having an entryway thereto, means associated with said casing for effecting closure of said entryway into the chamber, a head and means associated therewith and adapted through insertion into the pencil body to actuate said closure means to effect a closure of the opening into the chamber and by withdrawal of the same to effect an opening thereof.

17. In a pencil, in combination, a casing, a lead guide therein, a feed member, a lead propelling member adapted to co-operate with said feed member to effect advancement or retraction thereof lengthwise of the pencil, an operating means for the lead propelling member suitably supported in the casing and fashioned for relative inter-lock with the lead propelling member to facilitate the latter's being turned therewith to effect such advancement or retraction thereof and to permit free longitudinal movement of said operating member independent of the movement of the lead propelling member and a head member connected with said lead propelling member proportioned and fashioned to effect a closure of the rear end of the casing in conjunction with the entry of the lead propelling member thereinto.

18. In a pencil, in combination, a casing, a tip associated therewith, a lead guide communicating with the tip, a lead propelling member, a support therefor within the casing, actuating means for said lead propelling member adapted for projection within or withdrawal from said support, a housing for said actuating means, a head member connected with said housing and means for tensioning the supporting and the housing relatively when co-related through entry of the latter into the former to facilitate resistance against relative longitudinal movement therebetween.

19. In a pencil in combination, a casing for supporting operating members to facilitate the projection of a lead member including lead advancing means therethrough to a point of exposure, a head member and associated means adapted to function with the lead advancing means in the pencil body when co-related for operation and tensioning means functioning through such co-relationship of parts to effect a resistance against relative longitudinal movement between said head and casing.

In testimony whereof I affix my signature.  
JOHN C. WAHL.