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PATENT SPECIFICATION

409,074

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PROVISIONAL SPECIFICATION.

Improvements in or relating to Pencils.



I. ERNEST MACAULEY WADE, (British Nationality), of 13, Hope Street, Liverpool, in the County of Lancaster, do hereby declare the nature of this invention to be as follows:—

This invention relates to propelling pencils generally, but is more particularly concerned with and has for its object to provide certain improvements in pencils of the kind having a tube or other suitable socket wherein the writing lead or pencil point is frictionally held in which the point is projected to the writing position and retracted to its concealed position within the pencil by rotary movement of one part of the pencil body or casing relative to another part of the casing or by relatively rotating both parts of the casing, and in which pencil also the point is adapted to be expelled from the holder tube or socket upon final projectory movement of the parts.

The primary object of the present invention is to provide in such pencils a new or improved mode of connecting the holder tube or socket of the writing lead or point with the point-expelling rod or other member which is associated with the holder tube or socket and forms part of or is mechanically connected with the propeller action or screw whereby projection, retraction and final expulsion of the writing point may be effected on rotary movement of one or both parts of the pencil casing.

According to my invention, I provide a point-expelling member extending into the holder tube or socket and having created in its wall or surface a channel, groove, or recess, preferably arranged parallel with the axis of the pencil, wherein a co-operating lip or projection on a part of the holder tube or socket is entered. The lower shaft end of said channel or groove thus constitutes a shoulder or stop adapted to engage said lip or projection of the holder or socket and so serve to effect retraction or repelling movement of the writing lead or point, whilst the groove itself is of such length as to permit of lead-expelling movement of the slotted or grooved mem-

ber within the holder or socket upon the latter being arrested during final projectory movement of said member. The lead-holder may be mounted to slide within a longitudinal passage of the pencil casing or within a sleeve or tube located in said passage, but alternatively the holder may be frictionally engaged with and carried by the point-expelling member; any convenient means may also be employed to hold the lead socket stationary whilst the expelling member is being moved rearwardly within the socket after expulsion of a worn or broken piece of writing lead.

In carrying out my invention according to one convenient mode of embodiment, the lead-expelling member may consist of a metal rod extending longitudinally through the interior of the pencil and having, at its rear end, a lateral part engaging the propeller action or screw, and, at its forward end portion, a longitudinal channel or groove which terminates a short distance from the extreme end of the rod in order to provide a shelf or ledge for a projection created at the rear end of a metal tube into which the forward end portion of the lead-expelling rod extends. Said tube, which serves to frictionally hold the writing lead, may be slit or otherwise constructed, and the projection for connecting it with the grooved part of the expelling rod may be conveniently created by slitting and bending inwardly a portion of the metal at the inner or rear end of the tube, the inturned lip or projection so produced being of any suitable shape or configuration. The groove or recess in the expelling rod may likewise be of any convenient configuration in cross section, but is preferably similar in shape to that of the co-operating socket projection so that smooth and accurate working of the respective parts may definitely be obtained.

In order to arrest said lead-carrying tube or socket during final projectory movement of the expelling rod, there may be formed within the tip portion of the pencil casing an annular flange or seating, and to hold the tube or socket in its

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[Price 1/-]

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projected position whilst the forward end portion of the expelling rod is retracted to its rearmost position within the tube subsequent to the discharge of a worn or
 5 broken piece of lead a coiled wire spring may be fitted on the rod between the rear of the socket and a suitable collar or the like, on a rear part of the rod.

Dated this 20th day of December, 1932.

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 Agent for the Applicant.

COMPLETE SPECIFICATION.

Improvements in or relating to Pencils.

I, ERNEST MACAULEY WADE (British
 10 Nationality), of 13, Hope Street, Liverpool, in the County of Lancaster, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly described
 15 and ascertained in and by the following statement:—

This invention relates to propelling pencils or pencil actions with more especial reference to propelling pencils or
 20 pencil actions having a tube or other suitable socket wherein the writing lead or pencil point is frictionally held and in which the point is projected to the writing position and retracted to its concealed
 25 position within the pencil by rotary movement of one part of the pencil body or action relatively to another part of the pencil casing or action or by relative rotary motion of both parts of the pencil casing or action, and in which pencil or
 30 action also the writing point is adapted to be expelled from the holder tube or socket upon final projectory movements of the parts.

The main object of the present invention is to provide in such propelling pencils or pencil actions an improved and convenient mode of operatively connecting
 40 the holder tube or socket of the writing lead or point with a point-expelling rod or equivalent member which forms part of or is mechanically connected with the propeller action or screw and whereby
 45 projection, retraction and final expulsion of the writing point may be effected on rotary movement of one or both parts of the pencil casing or action.

In a mechanical pencil having a propel, repel, expel action it has heretofore been
 50 proposed to slidably mount on the plunger a lead carrying sleeve formed intermediate its ends with a circumferential groove pressed in the material so as to result in an inwardly projecting annular
 55 bead surrounding a reduced portion of the plunger and serving to secure the lead carrying sleeve on said plunger while permitting a limited range of telescopic

movement of these parts with respect to each other; the movement of the sleeve in relation to the plunger being limited by the bead abutting against either of the shoulders produced at the ends of the reduced portion of the plunger.

A propelling pencil according to my invention is distinguished in that the holder or socket for the writing point or lead is operatively connected with a forward or outer end portion of the point-expelling rod or equivalent of the propeller action or screw by means of a lateral projection formed on said holder tube or socket which projection engages in a recessed part formed in one side of said point-expelling rod or equivalent and co-operates with two spaced ledges or steps created through the formation of said rod recess, and spring means are provided on the lead-expelling rod or member to definitely hold the lead socket against rearward movement or displacement whilst said rod or member is returned to its normal position with respect to the lead holder to permit of the insertion of a new lead into the holder preparatory to the repelling movement.

The forward or outer end part of said recess thus constitutes within the confines of the wall or surface of the point-expelling rod or equivalent an inwardly directed step or ledge, or the like, which is adapted to engage said projection of the holder or socket and so serve to effect retraction or repelling movement of the writing lead or point, whilst the recess itself is of such length as to permit of a lead-expelling movement of the rod or equivalent member within or in relation to the holder or socket upon the latter being arrested during final projectory movement of said member, the second inwardly directed step or ledge formed in the rod at the rear of the recess serving to limit such lead-expelling movement of the rod.

I will further describe my invention with the aid of the accompanying sheet of explanatory drawings.

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In said drawings:—

Fig. 1 is an elevation, partly in section, of the lower or pointed end portion of a propelling pencil incorporating my 5 improvements.

Fig. 2 is an elevation, viewed at right angles to Fig. 1, of the lead carrier assembly shown in this figure.

Fig. 3 is a perspective view illustrating the construction of the lower or forward end part of the lead-expelling rod which carries the lead-holder tube or socket, and

Fig. 4 is a similar view showing the 15 construction of the lead holder.

In the particular embodiment illustrated, *a* represents the customary hollow body or casing of a propelling pencil, and *b* the tapered end or tip screwed therein; 20 *c* generally denotes the propeller action or mechanism mounted in the body or barrel and comprising longitudinally and spirally slotted sleeves as is usual in this type of propeller action or screw. *d* indicates a lead-expelling member consisting, 25 in the arrangement shown, of a metal rod which extends longitudinally through the interior of the pencil and is operatively associated at its rear end with the propeller action or screw *c* by means of a lateral part or pin *e* of the rod engaging in conventional manner said slotted sleeves of the action, so that by rotation 30 of said barrel *a* relative to a rear end cap or knob (not shown) of the pencil, or vice-versa, or by relatively rotating both of said pencil parts, the rod *d* may be longitudinally projected or retracted in order to propel the writing point or lead *f* into 40 writing position or to repel the lead into concealed position within the pencil body or barrel at will.

Said rod *d* is provided at its forward or outer end with a channelled, grooved, or 45 recessed part having a single longitudinal recess *g* of appropriate length formed as a side wall or surface by removal of a portion of the metal of the rod, and which recess terminates a short 50 distance from the adjacent extremity of the rod so as to provide within the confines of its wall or surface an inwardly directed step, ledge, or abutment *h* for a lateral projection *j* created on a rear or 55 inner part of a lead holder socket *k* and engaged in said longitudinal recess *g* of the lead-expelling rod *d*, the lead holder itself being in the form of a slit metal tube frictionally mounted on the forward end of the propeller rod and having a lateral projection *j* created, as shown, by inward pressing or indentation of a part 60 of the socket metal.

By so constructing the lead holder tube 65 or socket *k* and operatively connecting it

with the propeller rod *d* in the manner before described, it will be evident that during normal propelling and repelling movements of the parts the socket will, 70 by co-operation of the recess *g* with the lateral projection *j*, move longitudinally within the pencil conjointly with rod *d*, and that during the final projectory movement of said rod, the socket will come into contact with and be held against 75 longitudinal displacement by the flanged end *l* of the pencil point or tip *b* so that the expeller rod may move independently within the socket to eject a worn or broken lead from the pencil; the longitudinal recess *g* of the rod is, of course, of sufficient length to permit of such independent movement or displacement of the rod, and a second inwardly directed step or ledge *m* is also formed in rod *d* at the 80 rear of the recess *g* to limit, by contact with the lateral projection *j*, the lead-expelling movement of the rod.

In order to retain the holder tube or socket *k* in abutment with said flanged 90 end *l* of the tapered point or tip *b* whilst the forward end of the propeller rod *d* is retracted within the socket sufficiently to permit the insertion of a new writing point or lead *f*, a light coiled wire spring 95 *n* is mounted on said rod so as to engage the rear part of the socket at one end and the lateral pin *e* (or other suitable stop) at the opposite end of the rod.

Having now particularly described and 100 ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A propelling pencil or pencil action 105 in which the holder tube or socket for the writing point or lead is operatively connected with a forward or outer end portion of the point-expelling rod or equivalent of the propeller action or screw by means 110 of a lateral projection formed on said holder tube or socket, which projection engages in a recessed part formed in one side of said point-expelling rod or equivalent and co-operates with two spaced 115 ledges or steps created through the formation of said rod recess, and spring means are provided on the lead-expelling rod or member to definitely hold the lead socket against rearward movement or displacement whilst said rod or member is 120 returned to its normal position with respect to the lead-holder to permit of the insertion of a new lead into the holder preparatory to the repelling movement. 125

2. A propelling pencil with lead propelling, repelling, and expelling means 130 substantially as hereinbefore described and illustrated in the accompanying drawings.

Dated this 9th day of October, 1933.

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Fig. 1.

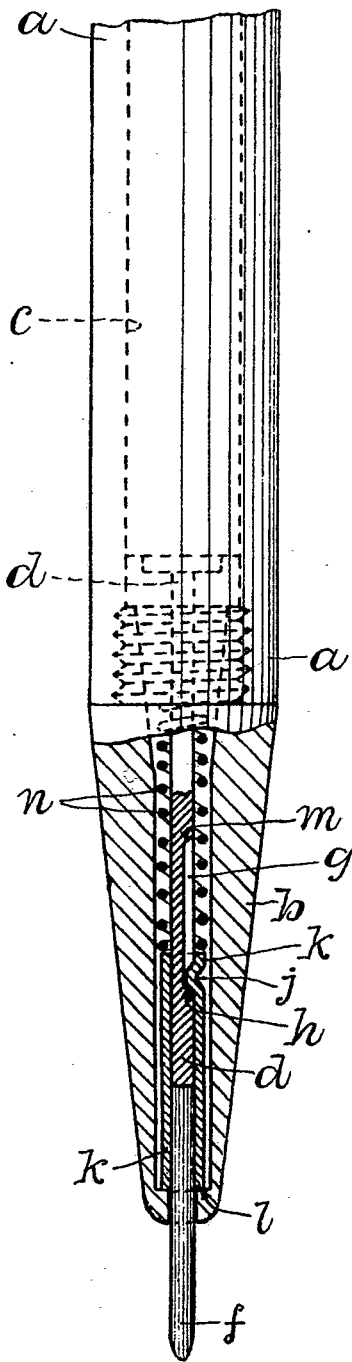


Fig. 2.

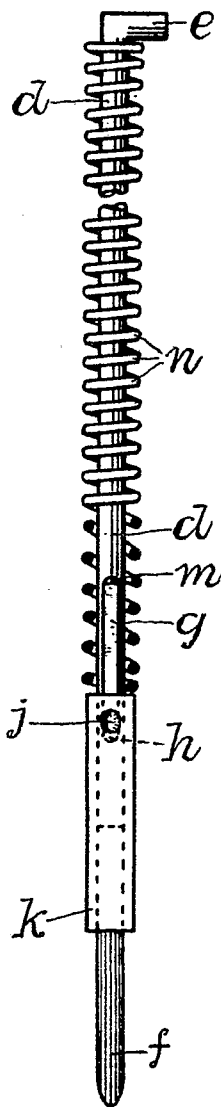


Fig. 3.

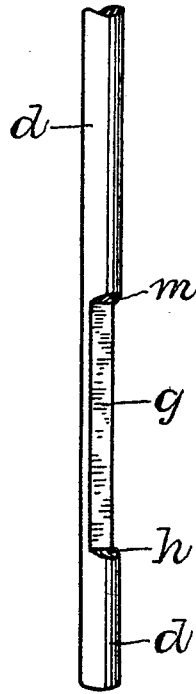
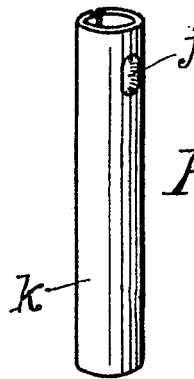


Fig. 4.



[This Drawing is a reproduction of the Original on a reduced scale.]