

UNITED STATES PATENT OFFICE.

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PENCIL.

1,423,603.

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To all whom it may concern:

Be it known that we, WILLIAM P. DE WITT and DAVID J. LA FRANCE, citizens of the United States, residing, respectively, at Somerville and Cambridge, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Pencils, of which the following is a specification.

This invention relates to pencils of the class employing removable leads and having means for adjusting said leads longitudinally of the pencil to take up the wear and also to permit said leads to be positioned entirely within the casing of the pencil.

The invention has for its object to provide a neat, simple and durable device which can be utilized for leads of very small diameter and which will so hold and fit said leads that they will not become broken but will at all times be firmly and securely held in position.

The object of the invention is further to provide a device of the character described which can be utilized not only to hold the lead which is being used but also to hold a supply of extra leads.

The object of the invention is further to provide a construction whereby an eraser may be positioned within the pencil casing and act as a separator to hold the extra leads in a casing provided therefor within the pencil casing.

The invention consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings:

Figure 1 is a sectional elevation of our improved pencil.

Fig. 2 is a detail section taken on line 2-2 of Fig. 1.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, 5 is an outer tubular casing, 6 is a tube slotted at 7 and constituting a holder for a lead 8. The tube 6 has fastened thereto a collar 9 which is also fastened to the inner wall of the casing 5. The forward end 10 of the casing 5 is conical in form and the forward end of the holder 6 abuts against the inner wall of said conical portion adjacent its point, so that the holder 6 is held firmly in position concentric with

the casing 5 by the collar 9 and by the conical end portion 10 of the casing 5. The forward end of the holder 6 is made of slightly smaller interior diameter than the diameter of the lead which is used, so that it grips said lead and holds it firmly in position within the tube 6.

A push-rod 11 is mounted to slide within the holder 6 and to thus push the lead 8 longitudinally within said holder and said push-rod has a lateral projection 12 thereon which projects into the slot 7 in the holder 6 and thus said rod is prevented from rotating. A screw-threaded member 13 is fastened to the rear end of the rod 11 and has screw-threaded engagement with an interiorly screw-threaded sleeve 14 which is closed at its rear end at 15 and is rotatably mounted at its forward end at 16 upon the holder 6.

A tubular magazine 17 is rotatable within the rear end of the casing 5 and is provided with an annular groove 18, and into this annular groove a flange 19 at the rear end of the casing 5 projects, so that the magazine 17 may be rotated within the casing 5 without moving longitudinally thereof. The magazine tube is reduced in diameter at 20 to provide an annular space 21 into which ears 22 upon a clip 23 may project. Said magazine tube is again reduced at 24 to fit the outside of the screw-threaded sleeve 14 and said reduced portion 24 is soldered to said screw-threaded sleeve 14 and rotatably mounted in a collar 29 which is soldered to the casing 5. A conical portion 30 connects the reduced portion 24 to the reduced portion 20 of the tubular magazine 17 and said reduced portion 24 terminates at its forward end in a flange 31.

Thus it will be seen that the forward end of the conical portion 30 forms a shoulder at the rear side of the collar 29 and the flange 31 forms a shoulder at the front side of said collar, which shoulders prevent the magazine tube from moving longitudinally, although it is rotatably mounted within the collar 29.

From this construction it will be seen that the holder 6, the sleeve 14 and the magazine tube 17 are firmly supported at intervals throughout the length of the casing, the magazine tube being supported in the rear end of the casing and in the collar 29 and

the sleeve 14 being supported by the forward end of the magazine 17 and by the rear end of the holder 6, while the holder 6 is firmly supported in the collar 9 and at its front end within the conical portion 10 of the casing.

A hollow head 25 forms a tight fit upon the extreme rearward end of the magazine 17 and has a bead 26 thereon which projects over and contacts with the rear end of the casing 5, forming a neat finish.

A cup 27 is inserted in the rear end of the magazine 17 and forms a tight fit therein and within this cup is located an eraser 28 which projects from said cup into the interior of the head 25.

The clip 23 is formed as shown in Fig. 1, with a space between the forward end and the casing 5, with its rearward end portion soldered to the outside of said casing. Two ears 22 are preferably upon said clip and extend through corresponding holes in the casing 5 and are riveted or clinched within said casing, thus firmly holding the clip in position upon the casing whereby the pencil may be safely secured in the pocket of the vest or other article of clothing in which said pencil may be placed.

The general operation is as follows: A supply of extra leads is placed within the magazine 17 and the eraser 28 is pushed into the cup 27 and said cup 27 inserted in the rear end of the magazine, thus holding the leads safely enclosed within said magazine. The screw-threaded sleeve 14 being closed at its inner end at 15 prevents any of the extra leads from accidentally entering said sleeve.

Assuming the push-rod 11 to be retracted a lead is placed within the holder 6 and pushed thereto until its forward end is enclosed within the forward end of the conical portion 10 of the casing. The head 25 which is attached to the rear end of the magazine 17 by means of a frictional fit thereon is now rotated, thus rotating the magazine, and the magazine being fastened at its forward end to the screw-threaded sleeve 14 rotates said screw-threaded sleeve. The magazine cannot move longitudinally thereof by reason of the fact that the flange 19 on the casing 5 projects into the annular groove 18 in said magazine and also because the conical portion 30 and the flange 31 located upon opposite sides of the collar 29 prevent longitudinal motion and, therefore, when the magazine is rotated by means of the head 25 the sleeve 14 will be rotated but cannot move longitudinally thereof within the casing. This results in the screw-threaded member 13 being advanced or retracted according to the direction in which the head 25 is rotated, whereby the push-rod 11 may be moved forward to force the lead 8 out of the pencil casing. The push-rod 11 is prevented from rotating during this operation by the

lateral projection 12 thereon which slides in the slot 7 provided in the holder 6.

When the lead has been all used the head 25 is rotated in the opposite direction to that hereinbefore described, thus causing the screw-threaded member 13 on the push-rod 11 to be retracted within the casing and within the sleeve 14, whereupon a new lead can be inserted and the operation repeated to advance the lead as it is needed for use.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. A pencil having, in combination, an outer tubular casing, a tube constituting a holder in the forward end of said casing fast thereto and adapted to hold a lead, a push-rod slidable within said holder, means to prevent said rod from rotating, a screw-threaded member on said rod, an interiorly screw-threaded sleeve engaging said screw-threaded member and rotatably mounted at its forward end upon the outside of said holder, a head rotatably mounted on the outside of the rear end of said casing and a tube fast at its forward end to said screw-threaded sleeve and at its rearward end detachably fastened to said head, said tube having an annular groove provided in its periphery adjacent its rear end into which the rear end of said casing projects and said tube being rotatably mounted upon and within the rear end of said casing.

2. A pencil having, in combination, an outer tubular casing, a tube constituting a holder in the forward end of said casing fast thereto and adapted to hold a lead, a push-rod slidable within said holder, means to prevent said rod from rotating, a screw-threaded member on said rod, an interiorly screw-threaded sleeve engaging said screw-threaded member, rotatably mounted at its forward end upon the outside of said holder and closed at its rear end, a head rotatably mounted on the outside of the rear end of said casing and a tube fast at its forward end to said screw-threaded sleeve and at its rearward end detachably fastened to said head, said tube having an annular groove provided in its periphery adjacent its rear end into which the rear end of said casing projects, the front end of said head enclosing and concealing said casing rear end.

3. A pencil having, in combination, an outer tubular casing, a tube constituting a holder in the forward end of said casing, fast thereto and adapted to hold a lead, a push-rod slidable within said holder, means to prevent said rod from rotating, a screw-threaded member on said rod, an interiorly screw-threaded sleeve engaging said screw-threaded member and rotatably mounted at its forward end upon said holder, a head rotatably mounted on the outside of the rear end of said casing, a tube fast at its forward

end to said screw-threaded sleeve and at its rearward end detachably fastened to said head and a collar fast to said casing in which said tube is rotatably mounted.

5 4. A pencil having, in combination, an outer tubular casing, a tube constituting a holder in the forward end of said casing fast thereto and adapted to hold a lead, a
10 push-rod slidable within said holder, means to prevent said rod from rotating, a screw-threaded member on said rod, an interiorly screw-threaded sleeve engaging said screw-threaded member and rotatably mounted at
15 its forward end upon said holder, a head rotatably mounted on the rear end of said casing, a tube fast at its forward end to said screw-threaded sleeve and at its rearward end detachably fastened to said head, and
20 a collar fast to said casing in which said tube is rotatably mounted, said tube being provided with shoulders on opposite sides

of said collar, whereby longitudinal movement of said tube is prevented.

5. In a magazine pencil the combination
25 of a tubular magazine having a circumferential groove; a tubular casing surrounding the magazine and having a rim engaging the circumferential groove of the magazine to permit rotation of the parts relatively to
30 each other; a cap for the magazine covering the juncture of the magazine with the casing and effective to rotate the magazine; a lead guide co-axial with the casing and the magazine; an ejector in line with the lead guide;
35 and means for translating rotary movement of the magazine into longitudinal movement of the ejector.

In testimony whereof we have hereunto set our hands.

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