

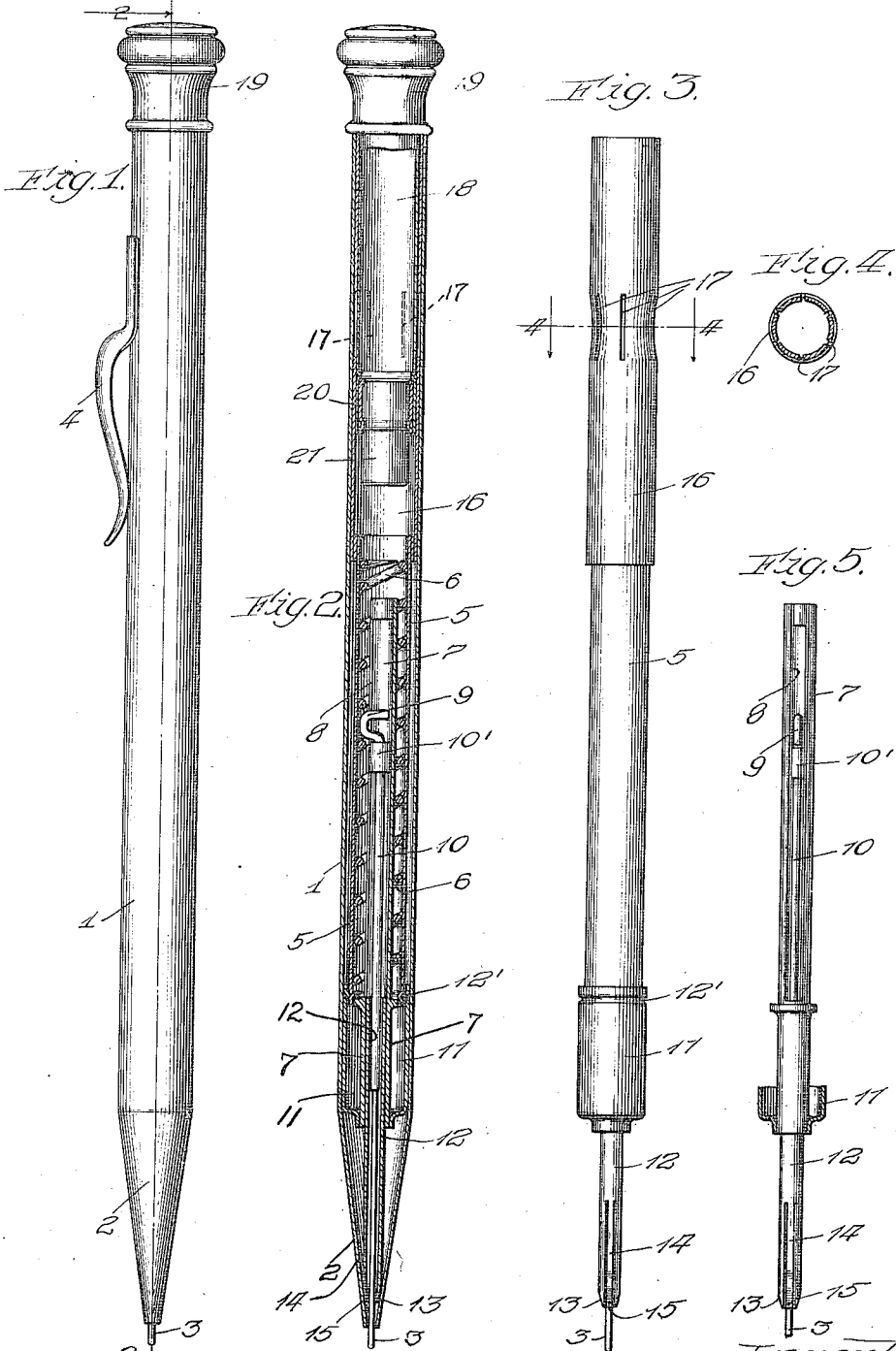
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PENCIL.

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1,284,156.

Patented Nov. 5, 1918.



Witness:  
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# UNITED STATES PATENT OFFICE.

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## PENCIL.

1,284,156.

Specification of Letters Patent.

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*To all whom it may concern:*

Be it known that I, WALTER A. SHEAFFER, a citizen of the United States, residing at Fort Madison, in the county of Lee and State of Iowa, have invented certain new and useful Improvements in Pencils, of which the following is a specification.

This invention relates to a pencil in which the lead is projected from a barrel by the relative rotation of the pencil parts.

The object of the invention is to provide a pencil of this class which is simple and durable in construction and efficient in operation.

The invention consists in the novel construction, combination and arrangement of the parts.

In the accompanying drawing—

Figure 1 is a view in elevation of a pencil constructed in accordance with the principles of this invention.

Fig. 2 is a sectional view.

Fig. 3 is a view in elevation of the interior parts.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 3; and

Fig. 5 is another view of the interior operating parts.

In pencils of this kind it is usually the practice to have a lead-holding member which both projects and retracts the lead upon the relative rotation of the pencil parts in opposite directions. The present invention differs in the respect that while the lead is projected by the relative rotation of the pencil parts, it is not retracted thereby, but instead is provided with a yielding holder and upon the withdrawal of the projecting parts the lead must be pushed in against the pressure of the yielding lead-holding means. Other novel features will appear hereinafter.

This invention comprises a barrel, with a pointed end 2 having an end opening in which a lead 3 fits snugly. Near the other end of the barrel is a pocket-holding clip 4.

Within the barrel is a shell 5 having a spirally arranged wire 6, or other suitable means to form a spiral on the inside of the shell, and within the shell is a tube 7 having a slot 8 on one side through which extends a bent extremity 9 of a lead projector 10, having a centering projection 10', the extremity 9 being engaged by the spiral formed on the inside face of the shell. The tube 7 is attached near the pointed portion of the pencil

to a fitting 11 which is secured to the interior of the barrel 1 by soldering, or other suitable attaching means, and between the shell 5 and the fitting 11 is an annular notched connection 12' for permitting the free rotation of the shell with respect to the fitting 11 and to the tube 7 which is fixed to the fitting.

Extending from the tube 7 to the point of the barrel is another tubular member 12 which may be formed either as an integral or separate part of the tube 7, but is preferably of a smaller internal diameter, just large enough to accommodate the projecting member 10 and the lead 3. This tubular member 12 is formed with a beveled extremity 13 which enables it to fit closely within the pointed tip 2 of the barrel, and in this extremity of the tubular member 12 is a spring tongue 14 which may be slightly thinner than the adjacent portion of the tubular member 12 and bent slightly inward at the tip 15 to grip and hold the lead 3 so that it will not fall out of the barrel, nor slip inward. This spring tongue, however, is not sufficiently strong to support the lead for writing purposes unless the inner end thereof is backed up by the end of the projecting member 10.

Attached to the rear end of the shell 5 is an integral or separate extension 16 which fits within the barrel more closely than the shell portion 5, but is freely rotatable therein. In this extension 16 are a number of longitudinal slots 17 which permit the member 16 to be depressed, as shown more clearly in Figs. 3 and 4, so that the slotted portion may be bent inwardly.

Insertible within the shell portion 16 from the outside of the barrel 1 is a magazine 18 having an outer tip 19 which bears against the end of the barrel and having a removable plug 20 at the inner end, which carries an eraser 21. Within this magazine 18 may be carried extra leads for use with the point, and the magazine makes a tight fit within the shell portion 16 so that the rotation of the tip 19 relatively to the barrel will cause the rotation of the shell portion 16, and also the rotation of its connected part 5. The plug 20 is easily removable from the magazine 18, and another plug may be substituted therefor so that the rubber eraser may be renewed as frequently as desired.

In operation, a lead 3 is inserted through

the pointed tip 2 of the pencil and is held in place by the spring 14. To project the lead from the barrel, the barrel is grasped with one hand and the tip 19 is rotated with the other in a direction to advance the projector 10 by means of the spiral 6. In order to protect the tip of the lead when the pencil is not in use, the projecting means may be slightly withdrawn by the relative rotation of the barrel and tip, and then the lead is pressed in against the holding tongue 14 until it is within the tip of the barrel where it will be ready for further use when it is again projected. It is necessary that the magazine 18 be inserted to rotate the shell member and, therefore, after a new lead is taken from the magazine and placed in the tip of the pencil, the magazine must be replaced in the barrel before the parts can be relatively rotated. Because of the close engagement of the tip of the pencil and of the tubular member 12, a thin lead can be used without danger of breaking, and this obviates the necessity of sharpening the lead for ordinary use. To use the eraser 21, the magazine 18 must, of course, be withdrawn from the barrel. The projector 10 is of sufficient length to completely eject a lead with any portion thereof from the tip of the pencil so that there is no danger of a portion of a piece of lead becoming lodged within the barrel, or within the tubular part 12.

I claim:—

1. In a pencil, the combination with a barrel and a shell entirely contained and freely rotatable therein, of means operated by the relative rotation of the barrel and shell to project lead from the tip of the pencil, and a member slidably insertible within the shell but projecting without and engaging the other end of the barrel for rotating the shell with respect to the barrel.

2. In a pencil, the combination with a barrel and an inner rotatable shell entirely contained within the barrel, of means operated by the relative rotation of the barrel and shell to project lead from one end of the barrel, and a tubular member slidably insertible within the shell but projecting without and abutting the end of the barrel for frictionally engaging the inside of the shell to rotate it with respect to the barrel.

3. In a pencil, the combination with a barrel and a shell contained and rotatable therein, of lead projecting means operated by the relative rotation of the barrel and shell, a member insertible within the shell, and a frictional clutch for said member and shell comprising a slotted portion forming inwardly bendable tongues, in the wall of the shell to engage the member.

4. In a pencil, the combination with a barrel and a shell contained and rotatable therein, of a grooved connection for preventing longitudinal movement of the shell in the

barrel, means forming a spiral within the shell, a slotted tube attached to the barrel having a member slidably therein with a bent extremity for engaging the spiral, and a tubular member insertible within the shell, and projecting from the end of the barrel for engaging and rotating it relatively to the barrel.

5. In a pencil, the combination with a barrel and a shell rotatable therein, of means actuated by the relative rotation of the shell and barrel for moving the lead, the shell being formed with longitudinal slots between which the material is bendable inwardly, and a tubular member insertible therein projecting from one end of the barrel and frictionally engaged by the shell adjacent the said slotted portion for rotating the shell relatively to the barrel.

6. In a pencil, the combination with a barrel and a shell contained and rotatable therein, of means for moving lead by the relative rotation of the shell and barrel, resilient means for opposing the movement of lead in the tip of the pencil, a hollow tubular member insertible within the shell but projecting from the end of the barrel and frictionally engaging it for rotating the shell relatively to the barrel, and a plug including an eraser for closing the tubular member and forming a magazine therewith.

7. In a pencil, the combination with a barrel and a lead-holding tube at the tip thereof, a longitudinally slotted tubular member alined with the lead-holding tube, a projector slidably in the slotted tube having an extremity which extends beyond the slot of the tube, a shell loosely mounted within the barrel having a spiral projection on the inner wall thereof to engage the bent extremity of the lead projector, a hollow tubular member inserted at the end of the barrel opposite the tip and projecting therefrom, and means forming a frictional engagement between this hollow tubular member and the inside wall of the shell for rotating the shell relatively to the barrel and thereby advancing and retracting the lead projector in its tube.

8. In a pencil, the combination with a barrel, of a shell freely rotatable therein having a plurality of longitudinal slots forming inwardly bendable tongues, a hollow tubular member inserted from the end of the barrel and frictionally engaging the tongues, the said shell having a portion with an inwardly projecting spiral, means for projecting the lead comprising a longitudinally slotted tubular member fixed to the barrel within the spiral portion of the shell, a lead projector having a bent extremity engaging the spiral of the shell and held against rotation by the slot of the tubular member in which it is longitudinally movable, and a lead-holding tube into which the lead projector extends

having a bent tongue adjacent the tip of the pencil for frictionally engaging a piece of lead contained therein.

9. In a pencil, the combination with a barrel pointed at one end, of a lead-holding tube secured in the barrel and extending close to the pointed tip of the pencil with an integral spring tongue to frictionally engage lead contained therein close to the extremity of the pencil tip, a shell contained within the barrel and freely rotatable therein but held against longitudinal movement and having a plurality of slots adjacent the end of the barrel opposite the tip, a hollow tubular member with an enlarged head insertible at the end of the barrel for engaging the slotted portion of the shell to form a frictional connection therewith, and means for project-

ing the lead outwardly from the pencil but not for retracting it, said means comprising a spirally arranged wire secured on the inside of the shell, a longitudinally slotted tubular member secured to the barrel in line with the lead-containing tube, and a projector movable in this tube having a bent extremity extending through the slot of the tube and into engagement with the spiral formed by the said wire so that the relative rotation of the shell and the barrel will cause the movement of the lead projector in one direction or the other.

In testimony whereof I have signed my name to this specification, on this 5th day of July, A. D. 1917.

WALTER A. SHEAFFER.