L. H. SONDHEIM.

PENCIL.

APPLICATION FILED NOV. 1, 1915.

1,187,018.

Patented June 13, 1916.

Fig. 1.

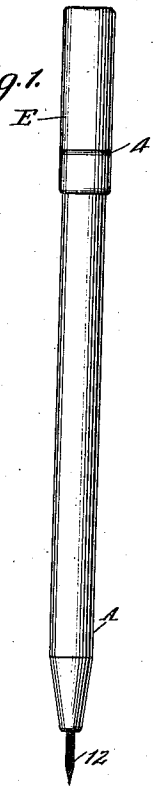


Fig. 2.

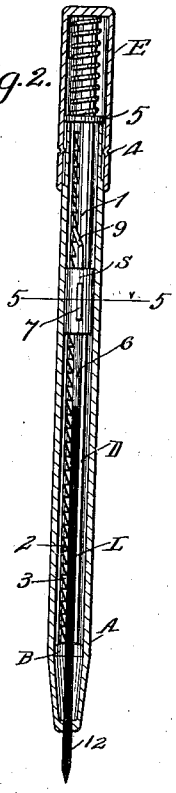


Fig. 3.

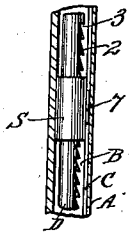


Fig. 4.

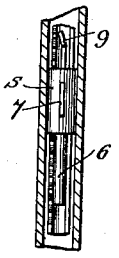


Fig. 5



Fig. 6.

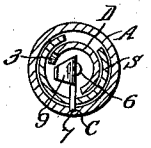


Fig. 11.

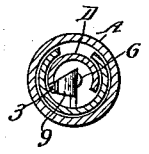


Fig. 7.

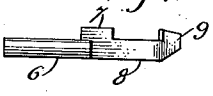


Fig. 10.

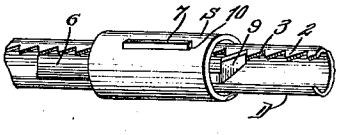


Fig. 8.

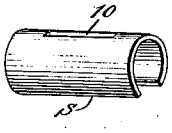
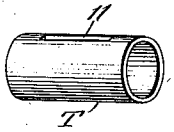


Fig. 9.



Witnesses:

G. F. Ellenbaum

O. F. Breen

Inventor:

Lewis H. Sondheim

UNITED STATES PATENT OFFICE.

LEWIS H. SONDHEIM, OF NEW YORK, N. Y.

PENCIL.

1,187,018. Specification of Letters Patent. Patented June 13, 1916.

Application filed November 1, 1915. Serial No. 59,096.

To all whom it may concern:

Be it known that I, LEWIS H. SONDHEIM, a citizen of the United States, residing in the city of New York, county and State of New York, have invented a new and Improved Pencil, of which the following is a full, clear, and exact description.

The invention relates to that class of pencils in which the lead is projected beyond the casing according as new writing points are required, provision being also made for permitting the lead to be pushed back within the casing whenever desired, and is similar in the construction of its casing and actuating tube to the construction shown in Patent No. 1,158,736 granted to me November 2nd, 1915, the present improvement consisting of the construction of the pusher and the parts attached to same; a variation from said former construction being shown also in the position and shape of the recesses in the actuating tube.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1— is a side view of a pencil embodying my invention, the parts visible being in the normal position showing the pencil ready for use. Fig. 2—is a sectional elevation showing the interior parts in the same normal position as in Fig. 1; Fig. 3 is a sectional elevation of a broken away part of the pencil giving a view from a point at approximately a right angle to that of Fig. 2, and showing the groove in the bore and the extension of the pusher which enters and moves in same. Fig. 4— is a sectional elevation of a portion of the pencil from the view point of Fig. 2, but showing the position of the pawl in the tube after the latter has been rotated to allow the lead and the pusher to be forced rearwardly. Fig. 5— is a cross section of the pencil taken on the line 5—5 in Fig. 2 and showing the pawl-end resting in one of the recesses of the actuating tube. Fig. 6 is a similar cross section, but showing the tube rotated from its position in Fig. 5 and the end of the pawl freed from the teeth of said tube. Fig. 7 is a perspective view of the body portion of the pusher and the pawl, the end of the latter being shown slightly bent to one side. Fig. 8— is a perspective view of an attachment to the pusher, consisting of a circularly bent plate of metal, which serves to impart to said pusher a frictional hold upon the walls of the bore in the casing, and which—for brevity—I will herein call a "circularly formed attachment". Fig. 9 is a perspective view of a modified form of the circularly formed attachment, consisting of a completely closed cylinder. Fig. 10— is a perspective view of the complete pusher with a section of the actuating tube shown passing between the body part of the pusher and its circularly formed attachment and Fig. 11— is a cross section showing a modification, there being a pusher with a circularly formed attachment but without any part projecting beyond the surface of the latter and with the groove in the casing (shown in the preferred form) omitted. All the figures are shown more or less enlarged.

The casing or shell A is preferably made of wood tapered at the forward end and has an enlarged bore B to receive the lead L and its holding and adjusting mechanism presently described. At the tapered end of the case the bore B is so narrow as to be capable of exerting a slight friction upon the lead sufficient to prevent it from dropping out of the casing. Opposite the point where the tapered end emerges into the cylindrical part of the case, the bore widens, and from this point there is a longitudinal groove C which communicates with the bore B and extends to the rear of the casing.

In the bore B is placed an actuating tube D, having a wide longitudinal slot 1 and a series of teeth 2, forming pawl-engaging recesses 3, along one edge of said slot. Said tube extends beyond the rear end of the casing A and is there firmly attached to a rotatable and longitudinally reciprocating push cap E, moving upon a ferrule F which is attached to the casing A, the forward end of the cap being slightly bent inward at 4, and the rear end of the ferrule being slightly bent outward at 5 so as to limit the rearward movement of the cap, said cap being a simple means of moving the tube D in longitudinally reciprocating direction as well as rotating it, but any other means of imparting said movement may be employed for the purpose, as for instance the mechanism shown in Patent No. 1,158,736 granted to me November 2nd, 1915.

The lead L fits the tube D so that, while it is prevented from shaking therein, it will

not frictionally bind it. Within the actuating tube D is loosely fitted a pusher G consisting of a body portion 6, which lies within said tube, the outwardly extending part 7 which passes through the slot of said tube, the pawl 8 and the pawl-head 9, and which is preferably formed from a piece of flat spring-metal, the pawl-head 9 being bent slightly to one side to form a detent to engage the recesses at the edge of the tube D. Surrounding the tube D is a short piece of spring metal "S" of circularly bent form which distends outwardly so as to frictionally fit the walls of the bore B when compressed into said bore, but which allows the tube D to move within it without material friction, and to which is firmly attached the extending part 7 of the pusher in such manner that said part projects beyond the outer surface of said circularly formed attachment S through its recess 10 and into the groove C of the casing A, in which it fits so loosely that said groove exerts no resistance upon its movement longitudinally, but prevents it from rotary movement. I have shown a modified form of the attachment S in Fig. 9, consisting of a completely closed cylinder T having the slot 11, which may perform the same function as the attachment S, provided it be so closely adjusted to the bore B as to have the necessary friction with the walls of the same without requiring too great force to be moved in said core.

The operation of the pencil is as follows:—When a long lead "L" has first been passed into the bore B and into the tube D from the point of the casing and the pusher carried rearward, (the pusher, tube D and cap E being in such relative position laterally that the pawl is free of the recesses at the edge of the tube) the cap and tube are rotated so as to bring said recesses in line with the pawl-end and cause the latter to rest in one of them or enter same upon any slight pressure upon the lead point.

If it is desired to advance the lead, the cap E with the tube D is moved forward and then drawn back. In its forward movement the forcible pressure exerted will overcome the friction-hold of the circularly formed part S of the pusher upon the walls of the bore B, and the pusher and the lead, which abuts the forward end of said pusher will be advanced. In its rearward movement the pawl-end will ride over the teeth of the tube, the frictional hold of the part S upon the walls of the bore B preventing the pusher from receding with the tube.

To move the lead rearward, the push cap with the tube is rotated in such direction as to cause the toothed edge of the latter to move away from the pawl-head 9 and until the opposite smooth edge of the tube abuts the side of the pusher-body 6, whereupon the pawl-head will be located in the wide slot 1 of the tube D, free of the teeth 2, and pressure upon the lead point 12 will move the lead and the pusher G rearwardly until the projecting part of the lead has been pushed into the casing.

In the modification shown in Fig. 11 the groove C and such part of the extension 7 of the pusher G, as projects beyond the outer surface of the attachment S, which are shown in Figs. 5 and 6, are dispensed with and the frictional contact of the said attachment S with the walls of the bore B—whether said frictional contact be caused by the distending action of the attachment itself, or by the pressure upon said attachment exerted by the body of the pusher—is relied upon to resist rotary movement of the pusher to such extent, that when the cap E with the tube D is rotated to move the toothed edge of the latter toward the pawl head 9 said resistance will cause said head 9 to contact with said toothed edge and enter one of the recesses 3, while upon the reversed rotation of cap and tube it would cause the pawl head 9 to be freed from the toothed edge, the rotation of the cap and tube, which in the construction shown is not limited, being continued in either case until the respective edge of the tube contacts with the pawl head 9 or the pusher body 6.

I do not limit myself to the details of construction which I have shown, as certain parts may be slightly changed without departing from the spirit of my invention. For instance, I do not limit myself to the use of a spring-pawl in the pusher, but consider the use of any means to bring a longitudinally reciprocating and rotatably movable actuating tube into engagement and again out of engagement with a pusher as within my invention, provided the same be used in connection with an attachment to the pusher on the outside of the tube having greater or lesser extent laterally and formed to adapt itself with frictional contact to the cylindrically shaped inner walls of the bore B, and which restrains the pusher from being moved undesirably, overcoming the incidental and minor friction of the pusher with the actuating tube by reason of the greater potential friction of said attachment with a portion of the walls of said bore B.

Having described my invention, I claim:

1. In a pencil, the combination of an outer shell having a central bore, a longitudinally reciprocating and rotatably movable lead containing tube in said bore, provided with a longitudinal slot, a lead propelling pusher in said tube, the slot of the tube being of sufficient width to allow the tube to have a turning movement relatively to the pusher, the tube and the pusher being respectively provided with means wherewith to engage each other, the rotary movement of the tube

serving to bring said tube into and again out of engagement with the pusher, and the forward movement of said tube serving to move the pusher forward when in engagement with same, the pusher having an extension which passes the exterior surface of the tube through the slot of the latter, said extension having affixed thereto on the outside of the tube a circularly formed attachment which bears with potential frictional contact upon the wall of the bore in the casing to restrain the pusher from being carried rearward by frictional contact of any of its parts with the tube during the rearward movement of said tube.

2. In a pencil, the combination of an outer shell having a central bore, a longitudinally reciprocating and rotatably movable lead containing tube in said bore, provided with a longitudinal slot and a longitudinally ranged series of recesses forming pawl-engaging surface shoulders, a pusher within said tube provided with a spring-pawl to engage said pawl-engaging shoulders when the pawl-end is in line with them, the pusher having an extension which passes the exterior surface of the tube through the slot of the latter, said extension having affixed thereto on the outside of the tube, a circularly formed attachment which bears with potential frictional contact upon the wall of the bore in the casing to restrain the pusher from being carried rearward by frictional contact of either of its parts with the tube during the rearward movement of said tube, the slot of the tube being of sufficient width to allow the tube to have a turning movement relatively to the pusher to bring the end of the pawl out of engagement and again into engagement with the surface shoulders of said tube.

New York, October 28, 1915.

LEWIS H. SONDHEIM.

Witnesses:

O. H. HARNEY,

FRANCIS FREUDENVOLL, Jr.