

Feb. 5, 1929.

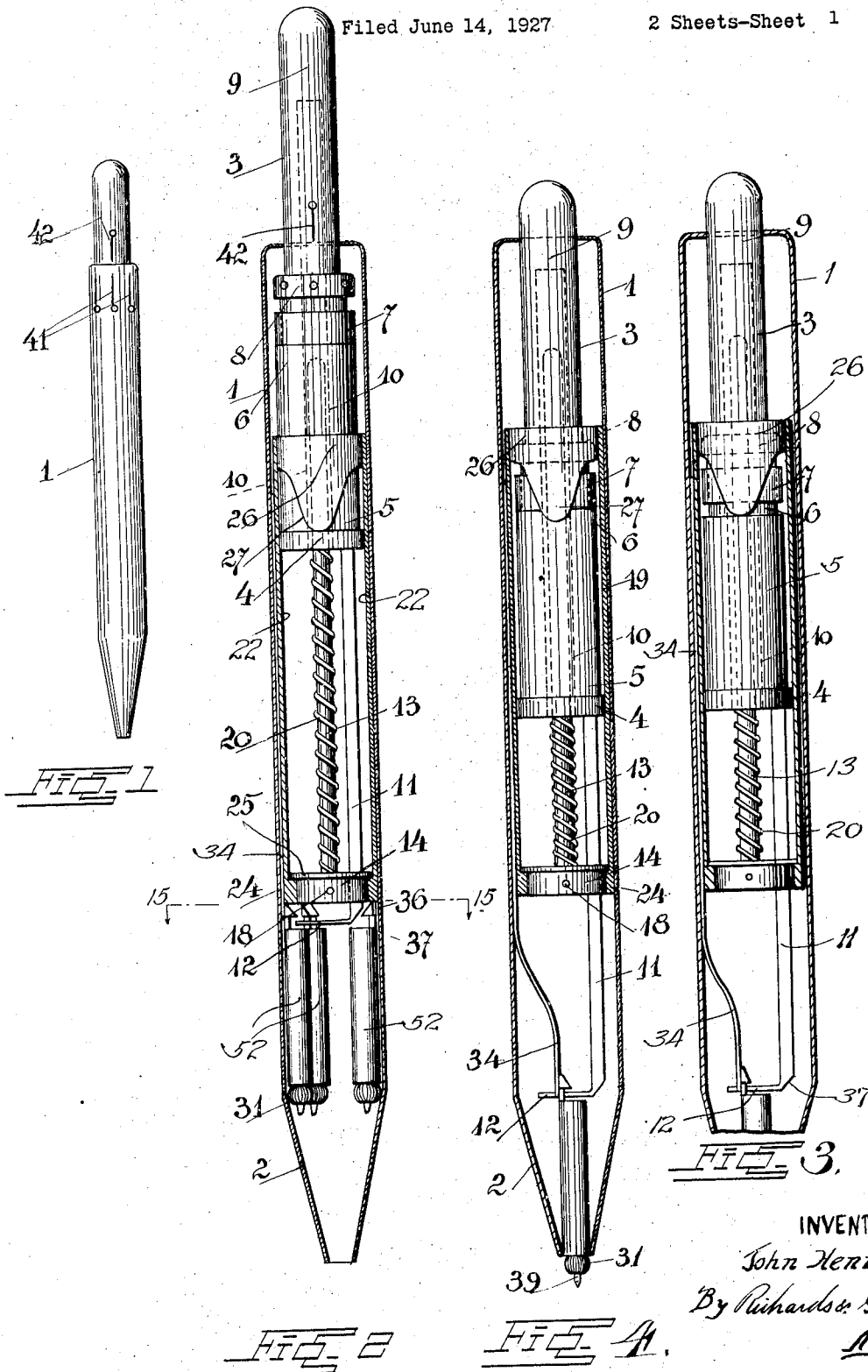
1,701,263

J. HENZEL

MAGAZINE PENCIL

Filed June 14, 1927

2 Sheets-Sheet 1



Feb. 5, 1929.

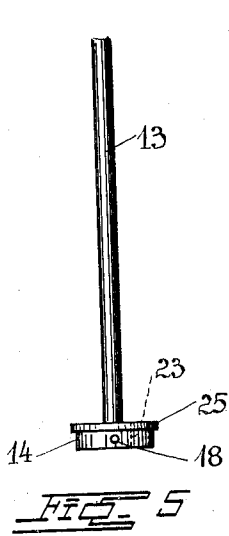
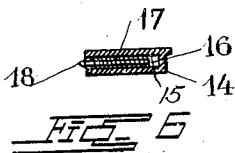
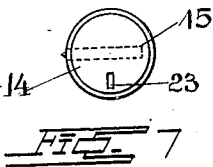
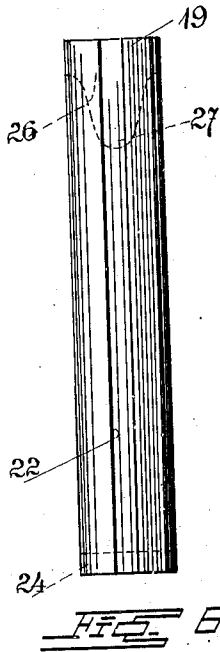
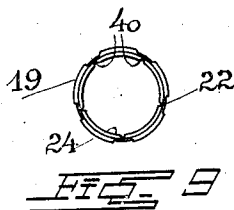
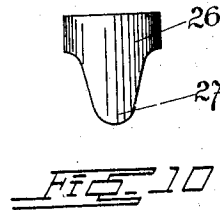
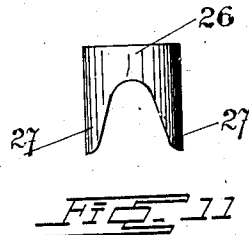
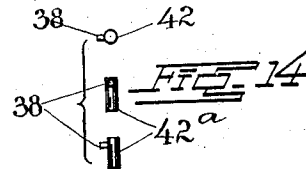
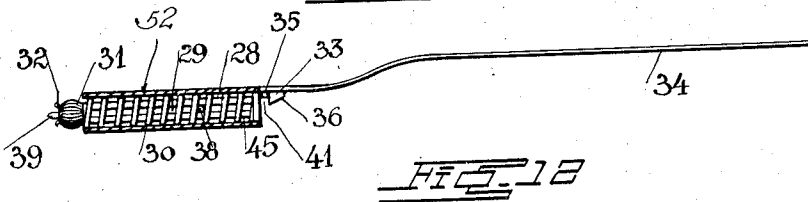
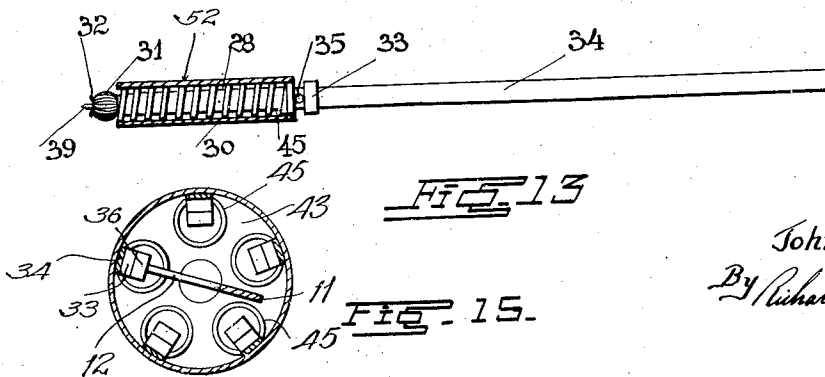
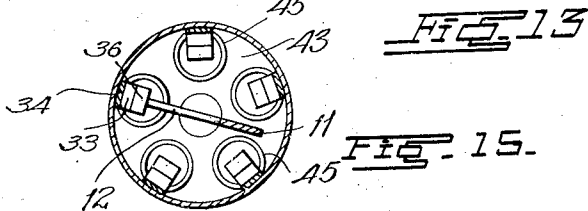
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2 Sheets-Sheet 2



INVENTOR:

John Henzel

By Richards & Keier

Attys.

Patented Feb. 5, 1929.

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UNITED STATES PATENT OFFICE.

JOHN HENZEL, OF BUDAPEST, HUNGARY.

MAGAZINE PENCIL.

Application filed June 14, 1927, Serial No. 198,725, and in Germany March 18, 1926.

This invention relates to a magazine pencil of the kind adapted to contain a number of leads of different colors capable of being brought from an internal position in the case of the pencil, selectively into a writing position in the single tapering pointed end of the pencil and the object of the invention is to provide improved simplified and effective actuating, guiding and fixing devices for the selected lead and a convenient external form for the pencil as a whole.

Hitherto pencils of this kind were formed with two telescopic members or tubes constituting the casing, one containing the actuating or advancing mechanism and the other, the leads of different colors and also the withdrawing means for the lead to be brought back from the writing position into the internal resting position in the circular series of the other leads, the relative rotation of the two telescopic tubes causing the selection of the lead and relative longitudinal motions causing the advance or withdrawal of the same.

According to the invention, instead of employing two telescopic tubes which increase the constructional breadth of the pencil and make it inconvenient to carry the same in the pocket, a single tube which is smooth throughout is provided and constitutes the case, while a central rod is rotatably and slidably arranged in this tube and is provided with an improved device forming both the advancing and withdrawing mechanism for the lead selected to be used. According to another feature of the invention an improved simplified device is provided for securing the said central rod, and thus also the lead, in the selected adjusted position against further rotation. Hitherto in some devices of this kind there was provided a spring cross pawl or the like arranged opposite to one side of the lead-actuating member for securing the same, this lateral external arrangement likewise increasing the constructional breadth of the pencil. According to the invention an internal central disc with a securing spring pawl is provided, which disc is coupled with the said central actuating rod in such a manner as to be rotatable by and with this rod but enabling longitudinal movement of the latter, this arrangement causing no increasing of the breadth of the pencil at all.

The carriers of the several leads of different colors are each mounted upon leaf springs

having the tendency to bring the lead once started from the lateral resting position, into the central writing position during the longitudinal advancing movement by the central actuating rod. In the devices of this kind hitherto used the leaf spring once freed got a swinging motion causing undesirable shocks and an uncertain operation of the pencil. According to the invention, a cross guiding arrangement is provided upon the leaf springs or the lead carriers and on the central actuating rod respectively, this arrangement enabling an exact guiding of the leaf spring and the lead both during the advancement and withdrawing of the latter.

A preferred constructional form of the pencil according to the invention is illustrated in the accompanying drawings in which:

Figure 1 is an external view of the pencil.

Figure 2 is a longitudinal mid section on an enlarged scale showing the resting position of all parts.

Figure 3 is a side elevation of the actuating rod.

Figure 4 is longitudinal mid section of the pencil in the writing position.

Figure 5 is a view of the spindle and the disc connected thereto.

Figure 6 is a section through the disc showing the spring-pressed catch.

Figure 7 is a bottom plan view of the disc.

Figure 8 is an elevational view of the inner hollow cylinder.

Figure 9 is a plan of Figure 8.

Figures 10 and 11 are views at 90° to each other of the resilient holding member.

Figures 12 and 13 are side and front elevations respectively of one of the lead carriers.

Figure 14 illustrates a detail of the lead pusher.

Figure 15 is a cross section on the line 15-15 of Figure 2.

The outer case 1 of the pencil shown in Figure 2 consists of a tube, the upper end of which is closed by a cross wall having a large central opening, whereas the other end of the case 1 is formed in known manner by a hollow cone 2 open at the extremity. Through the said opening of the upper end of the case 1 is introduced a rod 3 adapted to be rotated and pressed inwards and forming the actuating member which is shown separately in Figure 3 as a substantially unitary body. The rod 3 consists in general of a cylindrical

body and is formed in the following manner:

The lower portion of the actuating rod 3 consists of a pushing or engaging bar 11 of rectangular cross section offset as far as practicable from the axis of the pencil and provided at its lower end with a portion extending radially through the center of the pencil in the form of a pin or catch 12. Above the bar 11 the cylindrical portion of the rod 3 is provided with an annular extremity 4, followed by a cylinder 5 of somewhat smaller diameter; the further prolongation consists of a cylinder 6 of yet smaller diameter, provided with a movable ring 7, the movements of which are limited in one direction by the upper edge of the cylindrical portion 5 and in the other direction by the lower edge of an additional annular but fixed portion 8 of the rod 3 this portion 8 having the same diameter as the cylindrical portion 5. Up to the extreme upper end a cylindrical portion of yet smaller diameter is provided as a part of the rod 3. Finally this rod is provided with a central longitudinal bore 10.

In the bore 10 a spindle 13 is fitted and is capable of rotary and longitudinal movement. The spindle 13 is fixed to a circular disc 14 which is perforated near its periphery by a rectangular opening 23 to accommodate the bar 11 described above and which extends freely therethrough. The disc 14 is provided with a diametral bore in which is a pin 17 pressed outward by a coil spring 16 and having a conical pointed end 18 projecting somewhat from one extremity of the bore 15 and capable of being pushed back into the bore against the tension of said spring 16.

The spindle 13 is surrounded by a coil spring 20 (see Figures 2 and 4) supported at one end by the upper surface of the disc 14 and at the other end by the lower annular portion 4 of the actuating rod 3.

Into the case 1 of the pencil is introduced and secured a hollow cylinder 19 (see Figures 8 and 9) provided upon its outer surface with guiding recesses 22 the number of which is identical with the number of the required colors i. e. of the several lead carriers 45 (see Figure 2). In the present case there are five such colors and consequently five recesses 22 serving as guides for the lead carriers to be described below and having a flat rectangular cross section. At the lower end of the inner surface of the hollow cylinder or sleeve 19 is formed or fixed a ring 24 the inside of which is provided with five small grooves or apertures 40 (see Figure 9) cooperating with the above mentioned conical pointed end 18 of the spring-pressed pin 17 and corresponding in their angular position with that of the recesses 22, the lead carriers and the color indicating marks 41 (see Figures 1 and 2) provided at the outside of the upper end of the case 1. These marks cooperate with a single mark 42 of the rod 3 for the purpose of select-

ing the desired lead as described below. Upon the upper edge or shoulder of the ring 24 is supported the spring-pressed rim 25 of the above-described disc 14 whereby the latter is limited in axial direction but is forced by the engagement of the bar 11 with the rectangular opening 23 of the disc 14 to partake of the rotation of the actuating rod 3 when the latter is turned during the selection of the lead carrier containing the desired color.

Into the upper end of the hollow cylindrical body 19 is firmly mounted a resilient body 26 cut out from a thin wall tube portion and consisting of an upper annular portion and two tongue portions 27 formed diametrically opposite to each other. (See Figures 2 and 8.) This resilient or spring body is separately shown in Figures 10 and 11 in two different views turned with 90° in respect to each other.

The two resilient tongues 27 tend to press toward the axis of the pencil and rest therefore, when the pencil is not used (see Figure 2), firmly upon the cylindrical portion 5 of the actuating rod 3 but if the latter is moved in longitudinal direction (see Figure 4), then the pressure of the tongues 24 is transferred first upon the narrower cylindrical portion 6 of the rod 3 and then, at the continuation of this longitudinal movement towards the pointed end of the pencil, also upon the above mentioned movable ring 7 if the movement of the latter is limited by the fixed ring portion 8 of the rod 3 in the manner described below.

In Figures 12 and 13 is illustrated one of the lead carriers. Each lead carrier 45, which may be, besides, surrounded by a sleeve 52 (see Figure 2) consists in its core of a small tube 28 provided with a longitudinal slot 29. This tube is surrounded by a metallic wire coil 30 carrying at its lower end a corrugated knob 31. The sliding off of the wire coil 30 and the knob 31 from the tube 28 is prevented by the rim 32 of the tube which is bent outward for this purpose. The upper end of the tube 28 carries a hook portion 33 forming the coupling means between the lead carrier and the engaging pin or catch 12 (see Figure 3). As an elongation to the rear portion of this hook 33 a leaf or bandlike spring 34 is provided which fits into one of the guiding recesses of the outer surface of the above described hollow cylinder 19 (see Figures 8 and 9) and is slidable longitudinally in the guiding recess. The spring 34 is, according to my invention as shown in Figure 12, previously bent or curved in such a manner that it tends constantly to bring and retain the lead carrier 45 into the central position in the axis of the pencil so that by moving the spring (see Figure 4) out of the stretched or flattened position occupied by the spring in the guiding recesses 22 in the resting condition of the pencil, the lead carrier 45 is brought by the released spring 34 which re-

sumes its original curved form, automatically into the central working position (see Figure 4) and this is accomplished, in contradistinction to the pencils of this kind hitherto known, without any further forcing device or path.

Between the hook portion 33 and the preferably closed top of the tube 28 remains a space or recess 41 (see Figure 12) serving for the proper engagement or coupling of the catch 12 with the lead carrier, the catch being turned around the longitudinal axis of the pencil into the recess 41 when the actuating rod 3 is turned to be adjusted according to the selected color. Opening into the recess 41 and passing through the lower and rear portion of the hook 33 as well as through the spring 34 is a transverse bore 35 through which the catch 12 passes more and more laterally as the rod 3 is moved as described below (see Figure 4).

The hook portion 33 is formed with an oblique surface 36 and the lower end of the bar 11 with an oblique surface 37 corresponding thereto for enabling the lower end of the bar 11 to pass freely the several lead carriers one after the other during the rotation of the actuating rod 3 for turning the catch 12 into engagement with the recess 41 of the one lead carrier having in its interior the lead of the selected color (see Figure 2).

Into the said small tube 28 of each of the lead carriers is inserted longitudinally a plug 42^a provided with a small transverse pin 38 (see Figure 14) engaging with the said slot 29 and projecting from the tube 28 between two windings of the coil 30. When the latter is turned by means of the corrugated knob 31 in one direction the pin 38 of the plug 42^a is moved downward in the longitudinal direction and the lead 39 being inside of the tube 28 in contact with the lower end of the plug 42^a is advanced by the latter partly out of the pencil body; in this way the lead may be adjusted to the required extent for writing. For the purpose of changing or renewing the lead the corrugated knob 31 and thus also the coil 30 is rotated in the opposite direction whereby the plug 42^a is pushed upwards in the longitudinal direction so that the necessary place for the insertion of a new lead of full length is established.

The use and operation of the pencil described is as follows:

Figure 2 illustrates the resting condition of the pencil. When the pencil is to be used for writing with the selected color, the upper part of the rod 3 projecting from the case 1 is first rotated to such an extent that the mark 42 of the rod 3 is in alinement with that mark 41 of the case 1 which indicates the color desired. During this rotation of the rod 3 the bar 11 of rectangular cross section causes, by its engagement with the similarly shaped opening 23 of the disc 14, a

corresponding rotation of the latter and the pointed end 18 of the resilient pin 17 is withdrawn, against the action of the spring 16, from the groove 40 of the ring 24 of the fixed hollow cylinder 19, but at the moment in which the marks 41, 42 are in alinement with each other, i. e. when the rotation of the rod 3 is stopped, the pointed end 18 catches again into the corresponding groove 40, being now in front of the same, whereby the rod 3 is secured in the position in which the catch 12 is in registry with the selected lead carrier 45.

In the resting position of the pencil the spring 20 forces, on the one hand, the disc 14 downward against the upper edge of the ring 24 and, on the other hand, the annular portion 4 of the rod 3 upwards, until the upper edge of this portion 4 meets the lower ends of the resilient tongues 27 whereby the rod 3 is limited against further upward movement. During the rotation of the rod 3 for adjusting the selected color the catch 12 partakes, of course, of this rotation and, owing to clearance between the oblique surfaces 36, 37 of the lead carriers and the bar 11 respectively, passes freely the recesses 51 of the several lead carriers 45 enclosed in the sleeve 52 but at the moment in which the pointed end 18 of the pin 17 of the disc 14 catches into the said groove 40, the catch 12 stops inside of the recess 51 of the lead carrier which corresponds to the adjusted or selected color. Now, this lead carrier is to be brought into the central position inside of the cone portion 2 of the pencil. For this purpose the rod 3 is simply pressed downward, causing the following operation:

The spring 20 is compressed and the fixed spindle 13 penetrates, in a relative sense, more and more into the central bore of the actuating rod 3. During this movement of the latter the bar 11 passes downward in the rectangular aperture of the disc 14 and also freely in the space 43 (see Figure 15) between the two lead carriers opposite to the selected one (see the right hand side of Figure 15). In the example shown there are five lead carriers and in all similar cases in which the number of the lead carriers is an odd one, the bar 11 always finds a free space 43 opposite to a selected lead carrier. In other cases the bar may be placed or bent more inwardly toward the center to permit its free downward movement.

During the pressing down of the rod 3 the catch 12 performs a twofold movement with regard to the selected lead carrier 45, viz: it pushes the latter in advance of itself toward the lower end of the pencil and slides, in a relative sense, in cross direction more and more through the aperture 35 of the rear portion of the hook 33; this is caused by the fact that the leaf spring 34 is now moved out of its guiding recess 22 in the sleeve 19

and thus becomes more and more released for resuming its original curved form whereby the lead carrier is automatically forced towards the center of the pencil and thus moved also in cross direction (see Figure 4).

The annular lower portion 4 of the actuating rod 3 slides upon the smooth inner surface of the hollow cylinder 19 and the resilient tongues 27 slide, in a relative sense, upon the portion 5 of the rod 3, until they pass over the upper edge of this portion and snapping somewhat together at their lower ends they hold now firmly between themselves the ring 7 loosely mounted upon the rod 3. When in this position the pressure upon the rod 3 is stopped and the upper edge of the portion 5 of the latter bears against the lower ends of the tongues 27 whereby the pencil is secured in the working position shown in Figure 4. In this position the lower pointed end 39 of the selected colored lead may be adjusted at will or the lead renewed, if necessary, by turning the corrugated knob 31 projecting now from the tapering extremity 2 of the pencil.

After the use of the pencil the returning of the lead and the other parts into the resting position of the pencil is initiated likewise by a simple pressure upon the actuating rod 3 but now with a small stroke the only purpose of which is to bring the upper annular portion 8 of the rod 3 into contact with the ring 7 and to advance the latter somewhat underneath the tongues 27 whereby the extremities of the latter are spread and thus the upper edge of the portion 5 of the rod 3 released so that the pencil is no longer secured in the writing position. Consequently, the spring 20 is also released and by withdrawing the hand or the finger or thumb from the upper end of the rod 3, the latter moves upward under the influence of the expanding spring 20 with all parts attached to this rod 3, so that the upper edge of the portion 5 of the rod 3 meets the loose ring 7 which was temporarily retained by the mid portions of the tongues 27. The pressure of the spring 20 being greater than that of the tongues 27 the ring 7 is pushed upward by the portion 5 of the rod 3 which portion arrives underneath the extremities of the tongues 27 which were somewhat spread in the manner described. Thus, these tongues instead of being in contact with the narrower portion 6 of the rod 3 or with the upper edge of the portion 5 pass, in a relative sense, over the smooth outer surface of this portion 5 so that the actuating rod 3 becomes wholly released and all parts return under the action of the spring 20 into original position shown in Figures 1 and 2.

As to the lead carrier 45 itself, its band spring 34 is pushed by the parts 11, 12, during the operation just described with re-

spect to the rod 3 and the parts attached thereto, back into the longitudinal groove 22 formed on the outer surface of the inner hollow cylinder 19. Therefore the spring is spread or flattened more and more into the straight form whereby the lead carrier 45 is forced to move also laterally and at the same time the catch 12 is withdrawn in cross direction more and more out of the bore 35. Finally, also these parts 45, 34, 35, 12 take up the original position shown in Figure 2 ready for a new selection and adjusting of a lead having another or the same color, at will, by rotating and pressing down the actuating rod 3 in the manner described.

What I claim is:

1. In a magazine pencil, the combination of an outer sleeve and an actuating rod rotatable and slidable therein, a plurality of lead carriers mounted within said sleeve and movable to the forward end of the casing in position for writing, means for securing said rod temporarily against further rotation, such means comprising an inner central disc provided with a resilient catch adapted to engage with any of a plurality of recesses formed in the inner wall of said sleeve and corresponding to the lead carriers, and means for connecting any one of said lead carriers selectively with said rod for moving the same into and from the writing position, such means comprising a catch member upon said actuating rod, each lead carrier having a recess adapted to be selectively engaged by said catch member upon the rotation of the actuating rod around the axis of the pencil.

2. In a magazine pencil, the combination of an outer sleeve and an actuating rod rotatable and slidable therein, a plurality of lead carriers mounted within said sleeve and movable to the forward end of the casing in position for writing, means for securing the said rod temporarily against further rotation, such means comprising an inner central disc provided with a resilient catch adapted to engage with any of a plurality of recesses formed in the inner wall of the said sleeve and corresponding to the lead carriers, the said actuating rod passing slidably through said central disc but coupled therewith for common rotation, and means for connecting any one of said lead carriers selectively with said rod for moving the same into and from the writing position, such means comprising a catch member upon the said actuating rod, each lead carrier having a recess adapted to be selectively engaged by said catch member upon the rotation of the actuating rod around the axis of the pencil.

3. In a magazine pencil, the combination of an outer sleeve and an actuating rod rotatable and slidable therein, a plurality of lead carriers mounted within said sleeve and movable to the forward end of the casing in position for writing, means for securing the

said rod temporarily against further rotation, such means comprising an inner central disc provided with a resilient catch adapted to engage with any of a plurality of recesses
 5 formed in the inner wall of the said sleeve and corresponding to the lead carriers, the said actuating rod having a bar portion passing slidably through said central disc but coupled therewith for common rotation, and
 10 means for connecting any one of said lead carriers selectively with said rod for moving the same into and from the writing position, such means comprising a catch member upon the said actuating rod, each lead carrier having
 15 a recess adapted to be selectively engaged by said catch member upon the rotation of the actuating rod around the axis of the pencil.

4. In a magazine pencil, the combination
 20 of an outer sleeve and an actuating rod rotatable and slidable therein, a plurality of lead carriers mounted within said sleeve and movable to the forward end of the casing in position for writing, means for securing the
 25 said rod temporarily against further rotation, such means comprising an inner central disc provided with a resilient catch adapted to engage with any of a plurality of recesses formed in the inner wall of the said sleeve
 30 and corresponding to the lead carriers, the said actuating rod passing slidably through said central disc but coupled therewith for common rotation, and means for connecting any one of said lead carriers selectively with
 35 said rod for moving the same into and from the writing position, such means comprising a catch member upon the said actuating rod, each lead carrier having a recess adapted to be selectively engaged by said catch member
 40 upon the rotation of the actuating rod around the axis of the pencil, the lead carriers being mounted upon leaf springs previously bent into a curved form adapted to bring the lead carrier into the central writing
 45 position, and the inner wall of said sleeve being provided with longitudinal guideways for receiving said springs in retracted and flattened condition when said pencil is in inoperative adjustment.

5. In a magazine pencil, the combination
 50 of an outer sleeve and an actuating rod rotatable and slidable therein, a plurality of lead carriers mounted within said sleeve and movable to the forward end of the casing in position for writing, means for securing the
 55 said rod temporarily against further rotation, such means comprising an inner central disc provided with a resilient catch adapted to engage with any of a plurality of recesses formed in the inner wall of the said sleeve
 60 and corresponding to the lead carriers, the said actuating rod passing slidably through said central disc but coupled therewith for common rotation, means for connecting any
 65 one of said lead carriers selectively with said

rod for moving the same into and from the writing position, such means comprising a catch member upon the said actuating rod, each lead carrier having a recess adapted to be selectively engaged by said catch member
 70 upon the rotation of the actuating rod around the axis of the pencil, the lead carriers being mounted upon leaf springs previously bent into a curved form adapted to bring the lead carrier into the central writing
 75 position, and the inner wall of said sleeve being provided with longitudinal guideways for receiving said springs in retracted and flattened condition when said pencil is in inoperative adjustment, and
 80 means for guiding the lead carrier and its leaf spring in cross direction during the advance into and withdrawal from the central writing position.

6. In a magazine pencil, the combination
 85 of an outer sleeve and an actuating rod rotatable and slidable therein, a plurality of lead carriers mounted within said sleeve and movable to the forward end of the casing in position for writing, means for securing the
 90 said rod temporarily against further rotation, such means comprising an inner central disc provided with a resilient catch adapted to engage with any of a plurality of recesses formed in the inner wall of the
 95 said sleeve and corresponding to the lead carriers, the said actuating rod passing slidably through said central disc but coupled therewith for common rotation, means for connecting any one of said lead carriers selectively
 100 with said rod for moving the same into and from the writing position, such means comprising a catch member upon the said actuating rod, each lead carrier having a recess adapted to be selectively engaged by
 105 said catch member upon the rotation of the actuating rod around the axis of the pencil, the lead carriers being mounted upon leaf springs previously bent into curved form adapted to bring the lead carriers into the
 110 central writing position, and the inner wall of said sleeve being provided with longitudinal guideways for receiving said springs in retracted and flattened condition when said pencil is in inoperative adjustment, and
 115 means for guiding the lead carriers and their leaf springs in cross direction during the advance into and withdrawal from the central writing position, said means comprising a pin forming the said catch member of the actuating
 120 rod and adapted to be received within an aperture extending through the lead carrier, said pin penetrating through and withdrawing itself from the said aperture laterally by the advancing and returning movement of the said rod respectively.
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In testimony whereof I have affixed my signature.

JOHN HENZEL.